DOCUMENT RESUME

ED 100 721 SO 007 667

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TITLE Health Planning & R. Buckminster Fuller's World Game. Earthrise Document No. 1.
INSTITUTION Earthrise, Inc., Providence, R.I.
PUB DATE 17 May 71
NOTE 10p.; Some parts of marginal legibility
AVAILABLE FROM Earthrise, P.O. Box 120, Annex Station, Providence, RI 09201 ($2.00 copy; $1.00 each on order of 10 or more)

EDRS PRICE MF-$0.75 HC-$1.50 PLUS POSTAGE
DESCRIPTORS *Computer Oriented Programs; Futures (of Society); Games; Game Theory; Global Approach; *Health; Health Needs; Living Standards; *Planning; Research; Resource Allocations; Scientific Methodology; *Simulation; *World Problems

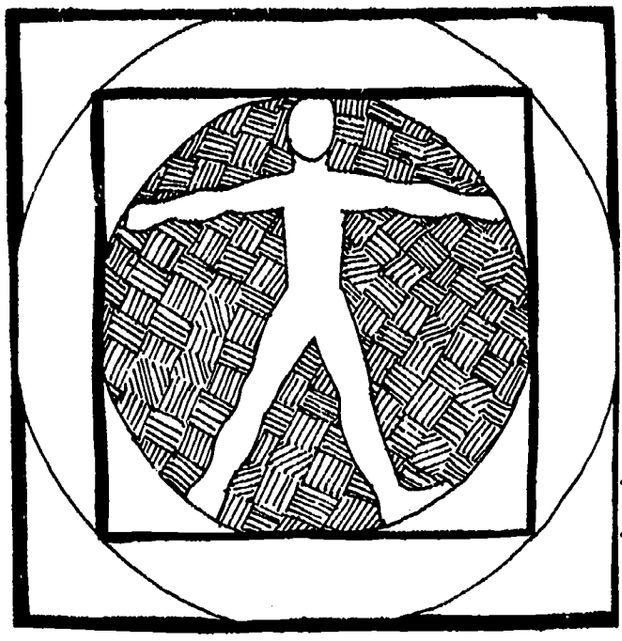
ABSTRACT

R. Buckminster Fuller's World Game is a scientific means for discovering the expeditious ways of employing the world's resources to provide a higher standard of living for all humanity. The philosophy behind the game is the exploration of resources to do more with less, or to combine two or more actions to produce a result greater than the sum of the two. The goal is to give man the right to life instead of having to earn it. The goal, philosophy, and computer technology of the World Game can also be applied to world health planning. Health is an individual right and all humanity must have the opportunity to enjoy life to the fullest. In order to develop world health planning, the planner must take full advantage of computer simulation to test data and possible health care strategies. For maximum efficiency, planning and research, agencies must be integrated. Politics will be the largest pragmatic obstacle to world planning since politicians are often slow-moving and evasive about dealing with death and disease. The primary philosophical obstacle is goal-defining. The World Game can help plan to get somewhere, but it can not tell us where we want to go. (Author/DE)

HEALTH PLANNING & R. BUCKMINSTER FULLER'S WORLD GAME

Carol St. Pierre

EARTHRISE DOCUMENT NO. 1
17 MAY 1971



Illustrations by Amy Blake

1. World Game Philosophy

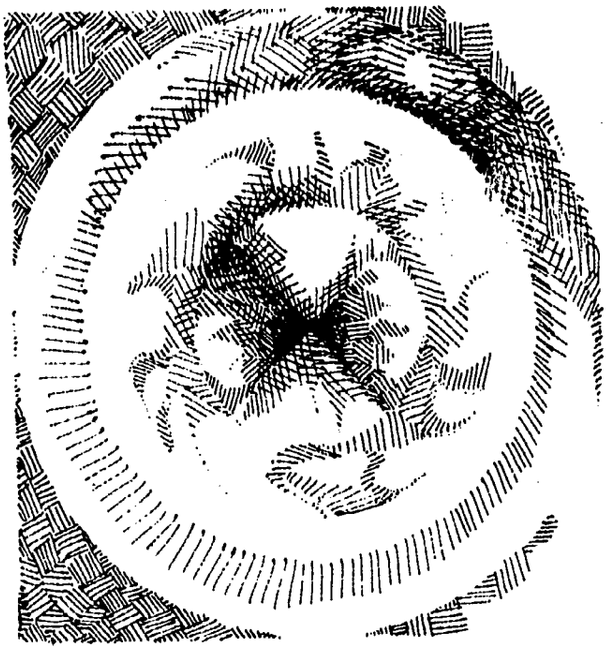
One cannot discuss social science and the future without some mention of the idea of planning. Most approaches to planning have the common feature of applying scientific reasoning to problem solving. A workable definition of planning for the purposes of this paper is the following:... "those activities required to organize and implement an intervention in current patterns of activities with the purpose of achieving a different outcome (or set of outcomes) than would have occured if there had been no intervention." (1) In the summer of 1969, R. Buckminister Fuller, architect, inventor, often called a twentieth century Renaissance man, and a diverse group of students began a discussion of global planning which has since evolved, and is continuing to grow, into the World Game. In this paper, I plan to present Fuller's more important concepts and to discuss the relation of the World Game philosophy to global planning for health. A general theme to keep in mind is: given that the "World health planners" accept a definition of health such as Talcott Parson's (the state of optimum capacity of an individual for effective performance of the roles and tasks for which he has been socialized) or that of the World Health Organization (the state of complete physical, mental, and social well-being, and not merely the absence of disease and infirmity), the idea would be to make the practice of health as close to the ideal as possible in light of the special case of a world society and/or utopia.

A single word describing Fuller's thought is breadth. The personal, historical derivations of his concepts are quite interestingly and fully discussed in his many works, and I won't delve into them here. His view of man is "as the comprehensive comprehender of local universe affairs". (2)* He wonders why we have not observed our children who comprehensively try to understand all and have instead chosen to become specialists. Fuller argues that a consequence of overspecialization is extinction because of the breeding out of general adaptability to one's environment. He claims that an overspecialized population will tolerate the many "low-energy events" it encounters, but that a "high-energy event" will ultimately destroy it. (pg.36) Part of his intent in the World Game is to return man to his role as a comprehensivist.

Perhaps the most important concept of Fuller's is that of synergy: "...behavior of whole systems unpredicted by separately observed behaviors of any of the system's separate parts or any subassembly of the system's parts" (pg64) Rene Dubos describes life in a strikingly similar manner: "But if life is regarded as emergence, displaying at each step in its evolution new properties that do not appear necessarily implied in the past and therefore could not be predicted from the constituent parts, then man can claim to be its most spectacular achievement."(3) Both Dubos and Fuller seem to view the world as a "single synergistic entity", part of a larger "cosmic unity". (4) Fuller feels that men disregard the synergy of life and its systems because of overspecialization. (pg.66) These similarities between the two men are noteworthy when one recalls that Dubos is discussing health, and Fuller utopias.

Fuller's concept of cosmic unity is contained in his definition of total universe in which he refers to the physical universe as defined by Einstein and others and to the other component, the metaphysical universe. He states that man learned to use his intellect effectively when he learned to generalize fundamental principles of the physical universe. In regards to the World Game, he feels that the metaphysical is now manifesting its ability to reign over the physical. (pg.33) In going on to discuss the actual philosophy of the World Game, I want to mention one last Fuller concept which I feel would be essential as a foundation of the Game. This is Fuller's view of wealth not as monetary, but as the "organized capability to cope effectively with the environment..."(pg.79)

The Game began as a seminar in 1969 to develop a research and design team to deal with the data and concepts necessary to play the Game. Among many questions asked were whether one can or must combine a philosophical system with a plan to restructure the world. The best expression of the Game philosophy is Fuller's own which I quote almost in its entirety:



"The World Game is a scientific means for discovering the expeditious ways of employing the world's resources so efficiently and omniconsiderately as to be able to provide a higher standard of living for all humanity - higher than has heretofore been experienced by any humans - on a continually sustainable basis while enabling all of humanity to enjoy the whole of planet earth without any individual profiting at the expense of another and without interference with one another, while arresting pollutions and conserving the wild resources and antiquities. The World Game discards the Malthusian doctrine which holds...that humanity is multiplying much more rapidly than it can supply resources to itself..."(5)

Fuller claims that Darwin's doctrine of survival of the fittest is inapplicable and that overpopulation is not a problem because science now finds that there is enough for everybody. He sees the assumption that there is not enough to go around as the root of nationalism and war. (pg39) He sees that we don't seem to be able to afford to do the necessary and logical thing to prevent war, which is producing enough to satisfy all the world's needs. He feels ultimately, politicians must find that they have to afford whatever they need, and at this time, they will turn to the World Game to discover what is needed and how to do it.(pg.89)

Fuller's answer is highly technological: "A new, physically uncompromised, metaphysical initiave of unbiased integrity could unify the world. It could and probably will be provided by the utterly impersonal problem solutions of the computers. (pg.32) He claims that the computer has made man obsolete as a physical production and control specialist and that he is now being forced to re-establish his innate comprehensiveness as is reflected by the integration of the sciences such as bio-physics and bio-chemistry.(pg.40) He sees it as appropriate that we assume the role of planners and begin doing the largest scale comprehensive thinking possible for man; (pg.53) the purpose being to give everybody a chance to develop his most powerful mental and intuitive faculties.(pg.108) The beginning must be an increase in the performance per pound of world resources to raise to standard of living of all humanity(pg. 116), and this is where the World Game begins.

The central dictum of the Game is the exploitation of synergism to do more with less, that is, to combine two or more actions to produce a result greater than the sum of the two. The World Game is a cooperative game, not a sum-zero game, which means that everybody wins as opposed to there being a winning side and a losing side. The goal is to give man the right to living instead of having to earn it so that he can reinvest his hours in the "metaphysical regenerative functions", as Fuller puts it.

The emphasis is on using experimentally disclosed data, not axioms. An example of such data follows. The numbers cited are the'bare maximum'. For example, the largest number of calories per day required by man is the 3500 needed by a pregnant woman. The goal of the Game is to make this maximum accessible to all humanity.

One man needs per day:(6)

Internal Metabolics	
1.4 lbs. pure air	0.96 gms. phosphorous
3500 calories	12 mg. iron
90 gms. protein	0.8 gms. calcium
5-? hours sleep	63-77 deg. F.
5.0 lbs. pure water	vitamins/minerals

External Metabolics
Access to medical attention
Acess to information, education, communication
Waste disposal
Re-creation
Ecological sweep-out (migration, transportation)

The ways man could go about meeting his needs were called "scenarios". The seminar decided that if the external metabolics were attended to first, these would more or less take care of the internal metobolics. No matter what was studied - food, communication, etc. - the problem always came down

to electrical energy, so the energy scenario came first with an aim of 15,000 kilowatt hours per capita per year by 2000 A.D. The idea is that furnishing an area with enough electrical energy for its industrialization will increase its communication and bring it the potential to satisfy its bare maximum food requirements. In terms of food the Game works on the theory that the world now produces enough to feed its people, but most is lost in processing. Among the many ideas for better food distribution, new food production methods were deliberately excluded to avoid the assumption of changing people's food habits. Thus far, in addition to the energy scenario, a housing scenario has been worked out. Others, such as communications which includes education and medical information and attention, are currently being worked on.

Fuller has been gathering data for the Game during the last few decades. My understanding of his ultimate aim is a total world simulation which would go on into the future of humanity, i.e. a way of making the world work for man, via socio-technological changes which would first be tested on the world simulator before being implemented in the world society. A simplistic way of describing Fuller's approach is that he views the world as a system and he is attempting to apply all the technology necessary and available in order to analyze it and find ways to make it work.

Many people whose work I read had ideas which in some ways supported Fuller. Most of these people were involved with health. The present world situation of alarming paradoxes is probably the best support of an attempt such as the World Game. As described by Evang, Norwegian health specialist, in a discussion of limitations to health control: "...our world at present is deep-frozen in an unhealthy medium of national and political interests and tradition, made even more unappetizing by the generous addition of racial and religious prejudices."(7) It does seem that the problems can be generalized in this way and that solutions cannot come from individual nations solving their own problems. The limitations to health control and planning will be discussed in more detail later, but the present general trend in too many areas is that "nonhuman interests are superseding many of our responsibilities to human biological welfare." (*) Lewis Herber, just quoted, also talks about the need to restore the "normal", balanced and manageable rhythms of human life. He points out that society, particularly Western, has gone from a state of arduous work and malnutrition to one of physical inactivity and overnourishment, and that there must be a move to moderation in both physical activity and nutrition.(8)

There are obviously many reasons for trying to ameliorate the world situation, but I found this, pointed out by Evang, a significant consideration for the future of humanity. The world situation in its present chaotic state has indirect and not-so-indirect effects on both the mental and physical health of the younger generation.(10) Not that these effects, more often than not negative, are limited to youth, but it is the younger sector of the population which will be responsible for bettering or worsening the world state, the choice undoubtedly reflecting the state of their minds and bodies. I will try to explore this more in relation to other areas.

One of Fuller's tenets relating to the Game is that individual nations must be done away with in order for humanity to be thought of and dealt with in the larger sense of a world society. He argues that the existance of sovereign nations was only logical when it was believed that there was not enough resources to go around. Some support for a world society can be found among health planners. The Swede, Engel, states: "There are hardly any longer any isolated national health or social welfare problems." (11) In a recent book, G.E.W. Wolstenholme of the Ciba Foundation expressed the feeling that no nation should even attempt to solve the problem of health on its own. He feels that health should become the model, the "pilot plan", for a world society.(12) The aim of the World Game is to raise the living standard of humanity, but as one writer concerned with health in developing nations says, the standard of living cannot be raised without solving many health problems. For example, consider the need for a healthy labor force. Investment in health can be viewed as an investment in improving the quality of the people.(13)

The need for embedding thoughtful health planning in something like World Game is well-expressed by Herber: "It would be utter folly to introduce needless changes in man's diet, forms of work, habits, and physical surroundings without investigating their effects from the broadest perspective of public health."(14) One health planning advocate sees health planning as a process which could yield greatest benefits with least expenditure of resources(15), a point agreeing well with Fuller's "do more with less" philosophy. The decision to serve all of the people creates a need for new planning and health care methods. As previously noted, Fuller's answer is highly technological, employing a high degree of automation and the furthest developments of computer science. In an article on health administration by Murray Grant, the technological approach receives support as Grant feels there is too much work in health systems to continue manual handling.(16) More on methods later. In the last few paragraphs, I have tried to illustrate the view held by some health scientists that planning for health should be on a global scale and to cite a few of their views which correspond well to the Fuller philosophy. Before going on to discuss what I feel should be considered in health planning, I want to mention briefly a few points made by Columbia sociologist, Amitai Etzioni, in an article on technological development for domestic progress.

In this article (17), Etzioni suggests a somewhat "Fulleresque" plan for establishing an agency in the United States whose purpose would be to develop technology and to serve as a "source" of technological advances from which cities, states or whatever could draw. He indicates that treatment for our most urgent problems, such as health, with our present means is not likely to be soon available and that investing more into such treatment is not likely to produce solutions. An example can be found in undeveloped nations where investment in health systems which were not designed to meet the needs of the culture would not produce solutions. Etzioni uses the example of the medical manpower shortage and the fact that services are now sought by more people as one area of need for technological short cuts. This idea of a specialized "bank"

*Unless otherwise noted, page numbers in parentheses refer to Fuller's Operating Manual for Spaceship Earth.

of technology is much in line with Fuller's plan for a centralized simulator. Etzioni also points out that politicians often plunge into new domestic programs, such as new health plans, without a pretesting and debugging phase, and this is precisely what Fuller is trying to eliminate by inventing large-scale simulation techniques.

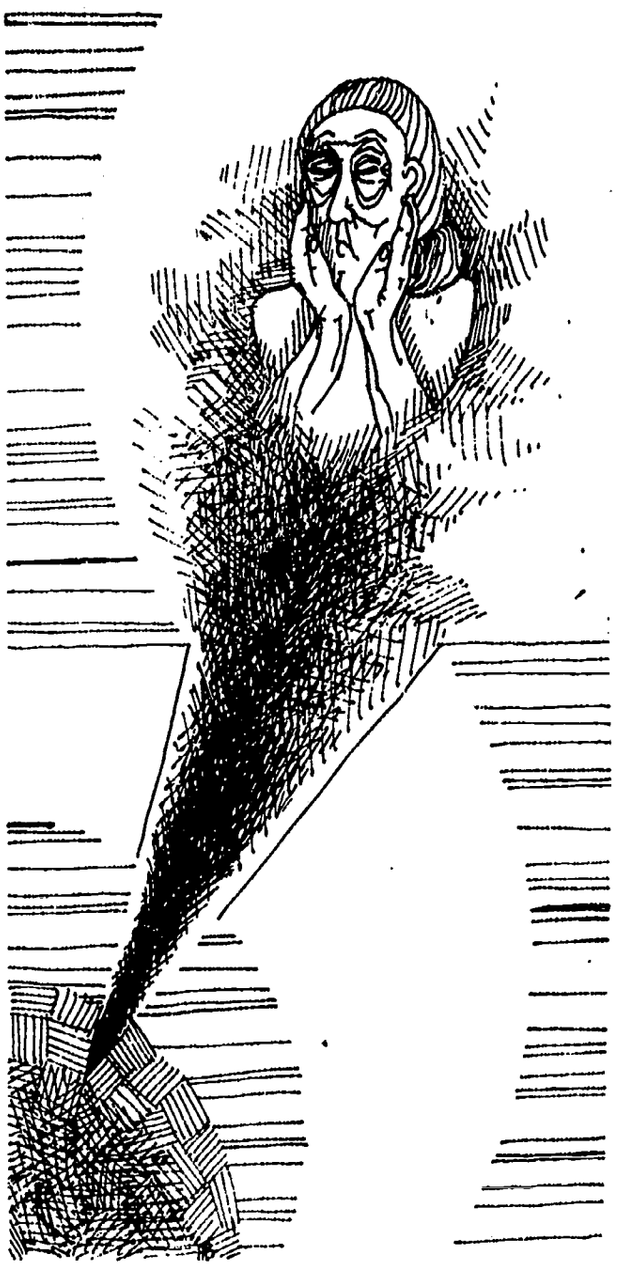
2. Health: Definition

In this next section, I want to deal with what I consider major considerations for health planning if it is ever to be done on a global level. The first requirement os that of having a universally accepted definition of health and disease. What these would contain is somewhat arbitrary since there is no one to judge their accuracy, but the point lies in their being accepted by all health planners. As stated in the introduction, my view of world health planning is that an ideal definition(s) be accepted and that the practice of health care be matched as closely as possible to the ideal.

There are several ways to approach the defining of health and disease. Dubos goes back to Hippocrates' teachings in which it is implicit that both health and disease are controlled by natural laws and both reflect the influence of environment on the way of life.(18) Dubos goes on: "The sickness of the individual is not readily differentiated from the sickness of the society."(19) Most of the health scientists I came across saw health and disease as very much related to the social and physical environment. Herber spoke of the profound consequences to health of social change, especially of dramatic changes such as the industrialization of an underdeveloped nation.(20) In his preface, Bryant indicated that causes of many diseases - malnutrition, gastroenteritus, etc. - are embedded in the way people live, in lack of education, and that health efforts must influence the way of life.(21)

Wylie (22) describes two types of health definitions: one such as WHO's which contains many undefined terms such as "well-being": this he termed "open-ended" or "asymptotic" because health can never be reached; the second type he referred to as "elastic", it being generally stated as "resistance to disease and adjustment to environment" and having the potential to encompass anything one chooses. Wylie feels that health and disease are part of the same continuum, as are hot and cold, and that they must be defined in a complementary manner.

Whatever definition, I think it should give the feeling for a health/disease dynamic system, intimately associated with the total environment of the individual. Dobus states that disease is the result of a constellation of circumstances(23), and I think this view is equally applicable to health. Although I have no reference to cite, I would think it likely that Fuller would view health/disease as a system within the larger world system. I can readily agree with Bryant's feelings that medical students should be introduced to the view of the health/disease system and to the concepts of systems analysis. Also, the related methods of experimentation and evaluation of data can be introduced in the context of physiology or biochemistry.(24) In general, I think the definition(s) accepted by world health planners should be as unambiguous as possible, should consider the individual as unique, and should reflect the dynamic interrelations of health, disease and society.



3. Health: Goals

Probably the most important step in any kind of planning is the defining and mapping out of objectives. This is particularly difficult in health planning because of the value-laden judgements which must be made concerning the worth of a human life. The crisis-orientation of modern medicine is often criticized. Wylie points to the discrepency between the WHO definition of health and its practice of health care, the former having the goal of positive health, thelatter that of curing disease.(25) In the World Game Report, the implication is that whatever health plan evolves out of the Game, it will start with Metts' premise that health is an individual right(26), and the primary focus will be on prevention and on giving all humanity the opportunity to enjoy life to the fullest. This requires, as Schuman points out, emphesing a preventive orientation in medical education and exposing students to the behavioral and social sciences.(27) The goal would be a state of "positive" health for everyone, but if health an disease are considered on the same continuum, there is no fixed point which is positive health. A subjective value judgement is involved,

much like that involved in determining the hotness or coldness of something. As Wylie puts it, we will continue to move further up the sclae as medical progress continues.(28)

An important point to consider is that of whose values will be used in defining the goals of the world health planning. For example, as Dubos points out, in this country, a big baby is considered healthy and desirable, although there is no medical data supporting this and perhaps more denying its validity(29). Also, Buckminster Fuller travels 100,000 or so miles per year and feels that possessions are burdensome. However, one must consider the effects of the comparative uncertainty of Fuller's life style on a person who hwd not self-evolved these values gradually enough for successful adaptation. In terms of mental illness, world health and general planners must consider the likely validity of Dubos' thesis that too rapid social changes have potentially very negative effects.

The final question of goals is fundamentally based in deciding the value of life. I quote from Dubos again: "To save people from death by measures of public health is proving relatively easy, but no solution is in sight for the many problems created by their survival."(30) Is survival to age one hundred to be a goal of world health planning if no remedy is found for senility and no better lives are to be provided for the aged than they have at present? Many unanswerable questions will have to be dealt with in making "policy" decisions. What of disabled and totally helpless but "alive" persons? Will euthanasia be accepted? The question of abortion will probably be answered by its acceptance, and there will hopefully be enough technology available to avoid ever deciding who is to live or die because there is only one machine. The sacredness of human life is deeply rooted in many sectors of society, enough so that dealing with the above goal questions will be very emotional, not a very rational matter.

4. Health: Indicators

In determining what needs to be done and how well a plan is working once implemented, indices of health and disease must be defined and accepted by world health planners and administrators, I strongly feel that these should reflect as much the quality as the quantity of health and should be carefully based not only on their estimates of the amount of disease from health statistics alone. The number of doctors in an area is not so important as their distribution, quality, and utilization. The number of cancer figures in an area is a useful figure, but if, as Fuller states utopia is the aim, something will have to be found which is an index of happiness and well-being. These comments point to the fact that if world health planning is to begin, epidemologists will, at least initially, have to reach almost all the people in the world to determine the initial configuration of health and disease.

5. Health: Disease: System

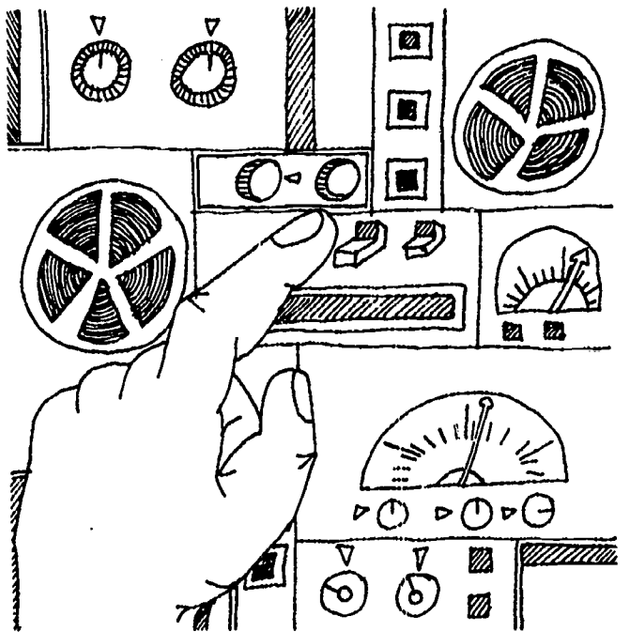
Beyond this, once the properties of the health/disease system have been determined and the system simulated by something like the World Game, it will be a matter of putting inputs into it and discovering the outputs. However, this is a far too simplistic picture because the epidemological task of measuring and defining the systems properties is massive. Arnold suggests that perhaps the most important role of community health workers is finding better ways to measure and delineate health values.(31) Bryant argues that critical connections between medical technology and the public, if not firm and effective, will prevent benefits from reaching the public.(32) Perhaps the epidemiological data could be collected at the community level and then put together to analyze the whole system. However, I want to leave this discussion of health/disease indices with a few points taken by Wylie. He asks if health and disease are measurable by the same techniques as are hot and cold or if they are different like length and time. In the former case, one measures how much heat, but not how much cold, and Wylie asks if health is analogous to cold.(33) I would venture to say that defining indices of health/disease, happiness/dissatisfaction is pretty much an arbitrary procedure, reflecting the values of the definer(s). Again, however, I make the point that if world health planning is even to be begun, some indices must be defined and accepted by the planners.

6. Individuality: Normality

I think the greatest potential dangers in global health planning are the strong temptations to forget about the uniqueness of each individual, and to overlook uniquely cultural factors, especially those relating to the physical environment. Just as a point of information, a whole book has been written called Biochemical Individuality in which the author points to rather pronounced physical and psychological differences between individuals resulting from comparatively subtle biochemical differences. I think any good health care system must have a high degree of flexibility on thepatient level to be able to consider the patient's unique problem. As Herber states: "It would be an error to form rigid concepts of normal man, a normal diet, or a normal way of life. Any such image would be woefully lacking in biochemical and physiological support."(34) With increaseing automation, this will become a serious problem, but one that world health planners would have to deal with since impersonality in treatment so often hinders the patient's response.

On a higher level are the problems posed for the world health planner by cultural differences. The heavy hand of Western tradition has been felt by less developed countries in which "modern" health care systems were introduced which were not in any real way designed to meet their particular needs.(35) Granted, in a global society, many cultural dissimilarities would vanish, but those relating to the physical environment of the area cannot be ironed out, nor should an attempt even be made. To be sure, there will be similar health problems in many diverse areas, but "Uniqueness is seen clearly enough and often enough to make one hesitate to generalize, to move too quickly to universal solutions."(36) Health programs must reach into the communities to understand the health problems unique to that area. Another matter to be considered: in a WHO study, sharp differences in health concerns were noted between advanced and underdeveloped areas. Industrialization is implicit in Fuller's plan to provide 15,000 kwh/capita/year by the year 2000. The interactions of the health/disease system and the modernization process must be considered in large-scale planning. There must be a clear expectation of new health problems and solutions created by the introduction of industry in an underdeveloped area. A point in favor of Fuller-type total world simulation here is the extreme

difficulty that planners attempting to deal with only health would have in being aware of unrelated events on their system.



7. Health: Planning: Simulation: Computers

The planner first defines what needs to be accomplished and then evaluates alternative means. Planning methods are many, but I agree with Woltsenholme in feeling that the most sophisticated mechanical methods of information storage and analysis should be employed in health planning.(37) That health is suited to the most well-developed planning methods is affirmed by Michael in the following assumptions: (a) It is possible to develop a quantitative index for all health problems on a common base; (b) It is possible to quantify all health activities; (c) An information system can be established providing the basis for cost/benefit analysis; (d) Such a system will provide assistance to comprehensive health planners.(38)

Again, in support of Fuller, the most sophisticated and useful methods will probably involve some type of computer simulation. Simulation is especially useful in avoiding the trial and error approach, since as Flagle comments, disruption of innovation because it isn't working is damaging to morale.(39) Vicente Navarro(40), in an issue of Public Health Reports, reviews six methods for elaboration of health planning using various criteria such as: (1) morbidity statistics; (2) mortality statistics; (3) utilization studies; (4) distribution studies; (5) system performance, in which output is measured in terms of performance; and (6) system structure which involves simulation. This last is the method chosen by Navarro himself. In another article(41), he discusses the health system model he has designed. It is applicable in prediction, simulation, and goal-seeking and integrates the component parts involved in health services systems for health planning purposes. A system is an interdependent group of parts forming a unified whole, and Navarro regards health services as such a system, dynamic and constantly changing.

Another article discusses a program developed by the government and industry for the purpose of coordinating numerous and complex programs to achieve a final objective. This is the Program Evaluation and Review Technique (PERT). The author indicates its potential for becoming a valuable mechanism of health planning of objective-oriented programs. It is most effective when the program requires simultaneous activities and has time limitations. Without further explanation, I attach a sample diagram of such a program.(42) Greenes and Sidel discuss another use of computers in the health field to display the quantitative data of geographic regions on computer-controlled maps.(43) This is another of Fuller plan since he is constructing a dymaxion map of the world on which the Game will be "played". A matter to be very cautious about is that the expert doing the systems analysis be well-versed in the health field to avoid making the simplistic, but all too common, assumptions about health and disease.

8. Health: Data

As pointed out by Colt, one of the elements of comprehensive health planning (and all planning) is a centrallized source of health data.(44) This is precisely what Fuller seems to want the World Game to be, only with part of the "data" being the actual simulation of the system. Before going on, I want to point out that I am assuming that Fuller's intent is to create a master information system, which includes world simulation on his dymaxion map; a system to which the world's politicians will turn if/when they realize that politics is an inefficient way of operating the earth. In light of this, a comment to be made is that the information system does not make decisions for the program manager (or government head) but furnishes him with a set of orderly objective data to make him aware of the implications of his decisions. Flagle stresses the importance of rapport between the simulators and decision-makers;(45) this might be difficult for Fuller since he regards politicians as, at best, non-essential.

I want to include here a brief discussion of potential types of health care organization resulting from comprehensive health planning. Much of this is from the Arnold article previously referred to. The mechanical bureaucratic structure, with its emphasis on means not ends, has not arrived at the concept of dynamic systems analysis. A suggestion is made that under conditions of constant change, an organic organization is more feasible. Individual tasks are continually redefined and the structure is more of a network that a heirarchy. (See PERT diagram) The health/disease system, as previously discussed, is a perfect example of a dynamic system. The heirarchical structure of many existing health delivery systems cannot be said to be maximally efficient, so it does seem probable that a more organic, network-type organization will be the result of comprehensive health planning.

9. Mental Health: Future

I want to indicate here some likely characteristics of the future pertinent to health planning. Engel (46) forsees a society in which the high degree of automation will create a situation whereby people will render each other services. This could mean a great deal in terms of re-establishing personal contact in health delivery, since a great deal of manpower would be available. When the population increase levels off (as Fuller claims it will once everyone has a higher standard of living and because as Youngblood points out, people will only

live longer not forever.)(47) The life expectancy will still be as great or greater and the aging population will require a high degree of medical care. With the higher standard of living, people will be more educated and demand more in the way of advisory and informative health services and more health control.(48) If happiness for all is the aim, as in Fuller's utopian view, then the health and world planner must have at his disposal the results of extensive research in psychiatry, especially child psychiatry, in order to best achieve his aim. Another question of goals enters here: what will the global society encourage, a well-socialized status quo, or the freedom of the individual to express himself? Also, a whole new group of medical problems is even now resulting from the development of new chemicals for consumer use, in food and otherwise.

10. Health: Planning: Politics: Utopia

Having discussed, however sketchily, what I feel are the major considerations for world health planning, I now attempt to make a case for the integration of all planning and research. Metts speaks of a comprehensive view of man and states that "All planning and services affecting man's health and well-being must be coordinated for efficiency, if for no other reason."(49) Several health scientists, including G. Lynn Deniston and Lee Holder(50) hold strongly the view that health should be studied within the context of total community development. As Raffel says in his discussion of a model health planning process: "The planning agency needs to know a great deal about its society - the society's resources, problems, potential, and aspirations."(51) I feel this is one area where Fuller's idea of comprehensiveness is of the utmost importance. Whether or not truly comprehensive planning is possible is another matter, but I think one has to view it as the primary outlook with the potential of producing total success. A final comment is to stress the need for integrating research and planning. As Arnold says, all planning tools require quantification and specification of aims, but we don't yet know enough about human systems to accomplish this.(52) Also, the more complete the understanding of human components, the more applicable, beneficial, and well-directed the developing technology and planning can be.

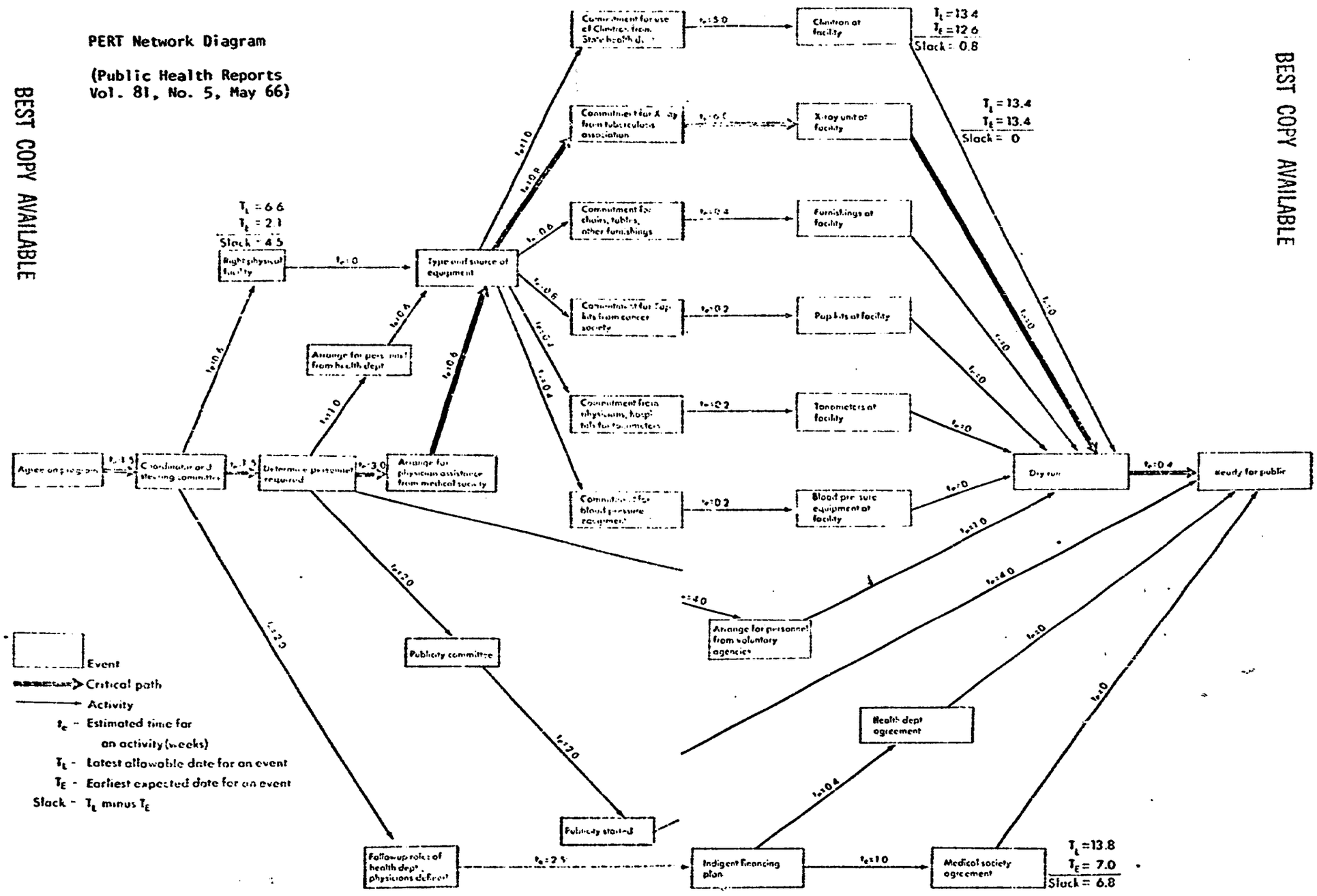
Limitations to health and world planning take many forms. Evang points to tradition as the root of difficulty in implementing new plans and to the fact that non-rational forces are often in the foreground. He goes on to describe politicians as slow-moving and personally evasive about dealing with death and disease problems, often striving to do the minimum to get by instead of the optimum which is Fuller's target.(53) This matter of politics will likely be the largest pragmatic obstacle to any type of world planning. I think Fuller is quite aware of this, and seems to feel that it will ultimately be a crisis situation of global character which will drive politicians to realization of the need for world planning. The primary philosophical obstacle is goal-defining. As Arnold says: "Management tools can help us plan how to get somewhere and learn where we are going, but they cannot help us decide where it is we want to go."(54) She goes on to point out that in the past, when technology was not developed, it was thought impossible to reach very high goals, so the matter of defining them was ignored. The problem is that as technology developed, for example, that which increased life expectancy, it was used without any attempt being made to define comprehensive goals, such as bettering the lives of the aged. So we are in a situation where a great deal of technology is being employed in an area such as health care, and no one can say, in any broad, philosophical sense, to what end. Without goal specification, I really feel that an attempt at world planning would lead to a situation more chaotic than at present, since the ambiguities would lead to more massive blunders.

In attempting to tie this up, I want to discuss very sketchily the desirability of utopia at all and/or the forms of a desirable utopia. Early in his book, Dubos states: "There is no doubt that man's own caprices and vagaries constitute the most insuperable obstacles to the achievement of the millenium and to the success of utopias."(55) At the risk of presumptously discrediting B. F. Skinner, I agree with Dubos and would like to believe that no amount of conditioning will render humanity able to accept a static existance. In terms of health, Dubos stresses the importance of available opportunities for change to channel creative energy. I don't believe the physiological effects of a monotonous life are yet known, but Herber stresses the need for diversity, not only psychological, but nutritionally, for example.(56) I have to agree with Dubos that medical utopia meaning complete freedom from disease is incompatible with the process of living unless some way is found to make the human body indestructable. Not only does this seem highly unlikely, but it's rather an appalling thought. I also feel it is somewhat erroneous to perceive health in a totally statistical way. As Herber says, "Health is enjoyed by the individual, not by such abstractions as 'man' and the 'community'".(57) I think one has to speak of a sociophysical environment which fosters the health of the individual instead of saying a "healthy society".

So where does this place Fuller's alternatives of utopia or oblivion before the end of the century? Does Fuller really mean a utopia free of conflicting decisions to be made? Fuller is such a dynamically alive person, that I seriously doubt his view of utopia consists of a smooth-running, well-conditioned society. Two points are to be made here. Fuller never said computers would do all the work (see Engel's view of a service-rendering society, previous page). Also, as Gene Youngblood comments,(58) we must not assume that man is inherently useless unless society gives him something to do. Fuller often points to the child who is comprehensively interested in everything and speaks of his desire to free us all to be children again if we so choose. Utopia on a global scale cannot be static and isolated, and I doubt that Fuller means "an uncritical, brainless state of euphoria"(59) since his intent is ti free man to think and to be a comprehensivist. In terms of health, I don't think Fuller means a utopia free of death, disease, and accident, but only that these will be handled as best as humanly possible when they occur and that much effort will be devoted to promoting a joyous state of physical and mental health for each individual as long as possible. Whether or not Fuller's macro-thinking will ever be brought to fruition for mankind is a question for which I have no well-formed comment, but I find his thoughts and his World Game provocative and would hope that more would consider and understand them.

PERT Network Diagram

(Public Health Reports
Vol. 81, No. 5, May 66)



Footnotes

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5. The World Game Report
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Earthrise

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