

TECHNOLOGY and SOCIETY



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CORRESPONDENCE OF THE COMMITTEE ON SOCIAL IMPLICATIONS OF TECHNOLOGY

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REPORTS ON IEEE'S FIRST ETHICS CASE

The two reports in this issue of TECHNOLOGY AND SOCIETY are outgrowths of a case involving Ms. Virginia Edgerton, a senior information scientist with the CIRCLE project of the New York City Criminal Justice Coordinating Council, who was discharged after raising questions regarding the efficacy of a computerized police emergency dispatch system—first to her supervisor and finally to the members of the CIRCLE committee. Ms. Edgerton contacted CSIT in June 1977, requesting assistance. At that time no formal mechanism existed within IEEE for evaluation potential ethics cases.

After a subcommittee of CSIT's Working Group Ethics and Employment Practices (chaired by Stephan Unger) completed its investigation of the case reported on here, IEEE instituted formal procedures for handling such situations. These were placed under the jurisdiction of the Member Conduct Committee (MCC). When the CSIT report was presented to the Executive Committee of the IEEE Board of Directors on May 21, 1978, that body referred the matter to the MCC for consideration under the new procedures. Both the report and the complete file on which it was based, were then turned over to the MCC.

That group, chaired by James Fairman, reviewed the file, obtained a notarized statement from Ms. Edgerton, the individual seeking support, and then drafted its own report. Following the precedent set by the CSIT Subcommittee, this draft was sent to the managers involved for their comments, and was subsequently presented to the IEEE Executive Committee with the recommendation that both the MCC and CSIT reports be published and that certain other steps be taken in support of Ms. Edgerton.

The Executive Committee then directed General Manager Richard Emberson to seek the opinion of IEEE's attorney, James Wiener, concerning the legal aspects of publication. After discussion and some correspondence involving Dr. Emberson, Mr. Wiener, Mr. Fairman and Dr. Unger, a consensus was reached that full publication was appropriate. This view was conveyed to the Executive Committee which, at its October meeting, approved such publication.

An article summarizing the Edgerton case appeared in the December 1978 issue of *The Institute*. Both committee reports are reprinted in their entirety here.

TO OUR READERS

A number of circumstances—for which we are, unfortunately, mainly responsible—have resulted in publication delays of such magnitude that only one issue of TECHNOLOGY AND SOCIETY was mailed in 1978. We sincerely apologize for this state of affairs. As the material for the remaining two 1978 issues is complete, it is expected that you will receive them within the next ten weeks. We expect to resume our 1979 publication schedules shortly thereafter under the editorship of Normal Balabanian. Material and correspondence may be addressed to Dr. Balabanian at ECE Dept., 111 Link Hall, Syracuse University, Syracuse, NY 13210. We call your attention to the subscription form on the back cover, and urge those not already on our reader list for 1979 to forward their subscriptions to the Editor. Again our apologies for the inordinate delays.

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TECHNOLOGY and SOCIETY serves as a forum for free, informed discussion of all aspects of social implications of technology and welcomes articles and letters from readers. The views and statements published in TECHNOLOGY and SOCIETY are those of the respective authors and not necessarily those of IEEE, its Board of Directors, the Technical Activities Board, or CSIT—or of any organization with which an author is affiliated.

LETTERS

At the bottom of page 1 of the March 1978 issue of Technology and Society it is said that: "The views and statements published in TECHNOLOGY and SOCIETY are those of the respective authors and *not* those of IEEE, its Board of Directors, the Technical Activities Board, or CSIT—or of any organization with which an author is affiliated" [emphasis added]. If the word "necessarily" wasn't inadvertently omitted after "not," I'd be pretty discouraged! I hope at least some of the views are shared.

Theodore M. Edison
West Orange, NJ

Editor's Reply: The omission was inadvertent, and has been corrected. As to reader Edison's last point, we hope so too!

In response to Leland Anderson's concern that the application of systems engineering to societal problems would limit the opportunity for experiment and heuristic evolution (Surrebuttall, Technology and Society, March 1978, p. 11.): An optimized societal system would include provision for just the right amount of experiment and heuristic evolution, according to the best consensus of their value.

The response to any other concern of this nature, that may subsequently be raised, is similar. Once a question about any possible effect of the application of systems engineering to societal problems is raised, that effect can be included in the optimization process, in accordance with the best societal consensus of the values relating to that effect.

Gerald Rabow
Livingston, NJ

The brief review, carried on page 12 of the March, 1978 issue of T&S, of the CEQ report "Solar Energy: Progress and Promise" may raise some potentially false hopes. An appropriate sequel would be a brief review of the testimony of DOE Deputy Secretary Jack O'Leary before a Senate Appropriations Subcommittee the week of June 26, 1978. During his testimony he stated that "to force solar energy to supply 25% of our nation's energy needs by 2000, as suggested in the April report by the President's Council on Environmental Quality, would be inordinately expensive—and not worth the expenses." In a reply to Senator Mark Hatfield, he told the subcommittee that solar will contribute "about 5% of U.S. energy needs by the year 2000" and that to move more quickly "would mean paying three to four times as much as we do now for energy."

A brief review of Secretary O'Leary's testimony is contained on page 9 of the McGraw-Hill publication "Inside DOE" for July 3, 1978. I feel that both sides of this important matter should be covered for the benefit of your readers.

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Professional Responsibility and the Dispatching of Police Cars—A Case Study⁵

1. INTRODUCTION

On May 25, 1977, IEEE member, Virginia Edgerton, a senior information scientist employed by the City of New York, telephoned the chairman of CSIT's Working Group on Ethics and Employment Practices, having been referred to the committee by IEEE Headquarters. She said that she had encountered a situation that might lead to the degradation of a data processing system (called SPRINT) used to dispatch police cars in response to emergency calls, and that her immediate superior, who disagreed with this assessment, refused to have the problem studied. Ms. Edgerton sought advice from the committee.

The problem involved predicting the effects on the SPRINT system if additional real-time tasks were to be executed on the same machine. The working group chairman referred Ms. Edgerton to Dr. Howard Eskin, Manager of Systems Programming, at the Columbia University Computer Center, in order to obtain a preliminary assessment of the technical aspects of the situation.

He reported after meeting with her that the matter was complex, that Ms. Edgerton was raising a legitimate issue and that definitive answers could not easily be found. Shortly afterward, Ms. Edgerton submitted a memorandum to her superior, Project Director, Sarwar A. Kashmeri, outlining the danger as she saw it. He rejected it. Two weeks later, expressing concern for the public safety, Ms. Edgerton circulated a revised version of this memorandum to the members of the Criminal Justice Coordinating Council, the organization employing her.

Following this action, she was summarily discharged by Mr. Kashmeri on grounds of insubordination. Ms. Edgerton then asked our committee to formally investigate the situation, signed a waiver letter in accordance with our procedures, and sent us various documents bearing on the case. We then wrote to the Project Director Kashmeri, asking for his version of the matter.

No response was received and so, after a suitable interval, we wrote to District Attorney Robert M. Morgenthau, CIRCLE Project Chairman, asking him to look into the situation and to respond to the prima facie case presented by Ms. Edgerton. This letter was answered by Mr. Kashmeri (acting, he stated, at Mr. Morgenthau's request). A letter to Mr. Gerald Hecht, Director of the Probation Department, for which Ms. Edgerton did some work during her tenure with the CJCC elicited the response that she had been "extremely diligent" in carrying out these responsibilities, evidencing "loyalty and enthusiasm."

A letter to Captain⁶ R. J. Noonan, the police official in charge of the division that operates SPRINT has not been answered.

⁵A draft of this report was sent to the individual who requested assistance (V. Edgerton), to the technical supervisor directly involved (S. A. Kashmeri) and to the principal officials in overall charge of the project (R. J. McGuire, R. M. Morgenthau and H. Sturz). It was then revised in the light of their responses.

⁶Now Deputy Inspector

2. BACKGROUND

SPRINT is a presently operational police and emergency on-line dispatching system that accepts as inputs (from a police terminal) New York City street addresses and responds (typically within seconds) with street coordinates and the location of the nearest patrol car. Police dispatchers, upon receipt of emergency calls for assistance, enter the addresses given and use the output to direct the nearest patrol cars to the scene. The system has been successfully operating for several years to reduce response times and may thereby be presumed to have helped save lives in critical situations. It is operated by the NYC Police Department on pair of IBM 370-158 computers, one of which is used for back-up and test purposes.

PROMIS is another on-line system, intended for use by prosecutors to keep track of various data pertinent to cases scheduled for trial. Under the aegis of the NYC Criminal Justice Steering Committee (CJSC), a project called the Criminal Justice Information Systems (CJIS) or CIRCLE project (these terms appear to be synonymous) was established to install the PROMIS system for use by the offices of the various District Attorneys of NYC. The project Chairman is Robert M. Morgenthau (Manhattan District Attorney), the Project Director (and technical manager) is Sarwar A. Kashmeri. Note that the SPRINT system and host computer are under the jurisdiction of the police department—not the CIRCLE project, while PROMIS is under the jurisdiction of the CIRCLE staff.

Ms. Edgerton has had 13 years of experience in the data processing field, a good deal of this time in responsible positions involving the installation and use of on-line systems. She was hired early in 1977 by the CIRCLE project as a consultant with the title of Senior Information Scientist (See Appendix A for job description).

3. THE TECHNICAL ISSUE

As indicated in the introduction, the technical issue is whether the host computer currently being used by the SPRINT system could also handle the PROMIS system without appreciably increasing the response time to SPRINT inputs. More precisely, the question is whether a serious analysis should be undertaken to estimate the likelihood of such an overload condition occurring. Ms. Edgerton does not assert that it *would* necessarily occur, but rather that it is her professional judgement that the possibility cannot be excluded a priori on the basis of existing data. She contends that, in view of the likely consequences to human life of an increase in response time to emergency police calls, a reasonable study is essential.

Dr. Eskin, on the basis of the limited information supplied to him, informs us that the problem is quite complex, requiring an assessment of the hardware and software involved, measurements of the load imposed by SPRINT, and a prediction of the amount of activity (at its peak) likely to be generated by users of PROMIS. No formal techniques exist for solving such problems, he stated. One can only study all of the data carefully, watch such installations (or similar ones) operate and then make estimates based on experience and intuition. He agrees that an off-the-cuff estimate in such a case could easily be wrong.

The point might be raised that the overload question could be dealt with by assuming that the load can be handled satisfactorily and then observing what actually occurs as various features of PROMIS are put into operation, and as terminals are added to extend the community of users. When an overload condition is reached, load could be removed and other arrangements made to deal with the situation. The problem is that overloading of such interactive systems can occur with very little warning, and the effects can be quite intermittent when the overload is marginal. In a situation, where commitments have been made, substantial sums spent on hardware and software, and personal prestige invested, one can easily imagine a prolonged period of degraded SPRINT operation during which those responsible might procrastinate about admitting that they had erred. If only inconvenience or marginal monetary losses were involved, this would not necessarily be too serious. But where individual human lives are thereby endangered, such an approach is highly questionable. It therefore would seem prudent to give the matter careful consideration before making a decision.

4. THE SALIENT EVENTS

Ms. Edgerton's duties included reviewing and evaluating computer programs and projects and doing feasibility studies for the CIRCLE project. At an early stage, after learning that the plan was to run PROMIS on the SPRINT computer, she recognized the possibility of overload and attempted to obtain the data necessary to study the problem. These attempts were unsuccessful, and the Project Director, according to her account, tried to dissuade her from pursuing the matter. She claims that no other efforts had been made or were planned to do such a study.

Mr. Kashmeri, in his response to our letter to Mr. Morgenthau (Appendix B), asserts that the issues she raised "were at the time (and still are) under continuing discussion with the computer staff of the New York City Police Department and members of the CIRCLE Committee." He does not however mention any specific individuals or documents. Our understanding is that no members of the CIRCLE Committee are computer experts, and that other than Mr. Kashmeri and Ms. Edgerton, no computer experts were employed by the Committee. Furthermore, Ms. Edgerton informs us that she knows of no police department employees who were senior systems analysts expert in on-line systems.

Ms. Edgerton maintains that Mr. Kashmeri refused to allow her to circulate memoranda on the overload question to others involved in the project (that is, the CIRCLE Committee). She was summarily dismissed when she did circulate such a memorandum.

There seems to be no dispute as to immediate reason for her termination. In his letters both to her and to us, Mr. Kashmeri states (the quote is from the latter—see Appendix B):

"The termination...was effected because (1) her distribution of the memorandum to the members of the CIRCLE COMMITTEE was in direct violation of policy established by me, and (2) against expressly given orders that all communications sent to the members must be approved by the Project Director."

5. THE ISSUE OF PROFESSIONAL RESPONSIBILITY

A key aspect of this case is the conflict between the concept of hierarchical responsibility—the chain of command—and the idea that a professional has certain direct responsibilities that cannot be delegated. In the present instance, the particular responsibility involved from the engineer's point of view is embodied in Article IV, item 1 of the IEEE Code of Ethics. "Engineers shall...Protect the safety, health and welfare of the public and speak out against abuses in these areas affecting the public interest." (Virtually all codes of ethics for engineers and scientists contain similar provisions.)

A distinguishing characteristic of a profession is that practitioners, in important aspects of their work, cannot allow their professional judgements to be peremptorily overridden by organizational superiors. The head of surgery in a hospital, for example, cannot order a staff surgeon to use a particular technique in a certain operation when the surgeon considers it to be inappropriate. A lawyer who believes that it is in the best interest of his client to advise a plea of guilty cannot properly give contrary advice when ordered to do so by the head of his law firm.

The obligation entails more than simple refusal to participate directly in acts one judges to be improper. Professionals must view the consequences of their acts broadly. Where it is clear that simple abstention, which usually implies a resignation, is unlikely to avert the likelihood of serious harm being done, than a more active stance is required. This might entail appeals within the organization to higher ranking technical managers or to top officials in the organization. Professional societies, governmental regulatory agencies, volunteer public interest groups, legislators, the press or other outside groups might be alerted. The kind of action appropriate to a given situation depends on such factors as the seriousness of the matter, the degree of certainty felt by the professional, and the structure of the organizations involved. If the only legitimate recourse were the principled resignation, then, apart from the fact that this may often be ineffectual, the high personal cost to the individual will result in the quiet acceptance of many very serious errors.

On the other side is the concept of a manager making a decision for his organization and taking full responsibility for the consequences. This may be considered an appropriate mode of operation in the great majority of cases. However, when a professional within the organization who has responsibilities in an area affected by that decision feels strongly that an error with potentially serious consequences is being made, then means should exist for having that decision reviewed by other qualified people. Any organization using technology in a manner that may affect the public safety or welfare is operating in an irresponsible manner if it does not provide for such reviews. The situations contemplated here are clearly *not* analogous to those faced by an army on a battlefield or a ship at sea, where, on the basis of extreme time constraints, rational cases can be made for demanding immediate, unquestioning obedience to orders from superiors; though even there exceptional situations sometimes arise. Where an individual repeatedly challenges managerial decisions and competent technical

reviews subsequently find these challenges to be without merit, then that person's professional competence may be legitimately questioned, as it should be in any instance of serious technical error. For this reason, and because of the natural reluctance of most people to "make waves," competent managers need not fear that their positions would be made untenable by the overzealous application of the aforementioned principle by subordinate professionals.

6. THE RESPONSE

As stated in our opening footnote, a draft of this report was sent to the principals involved. The only response from a NYC official came from Deputy Mayor for Criminal Justice Herbert Sturz (Appendix C). Note that he assumed office in 1978, many months after the events related here.

Mr. Sturz states his understanding that the matter raised by Ms. Edgerton has been, and continues to be, under consideration. If indeed this important and difficult technical question has been seriously studied, there would surely exist at least one technical memorandum discussing the issues. No reference to such a document appears in Mr. Sturz's letter. Nor does he name any individual who made such a study. Similar omissions also characterize the earlier letter (Appendix B) from Mr. Kashmeri.

While Mr. Sturz expresses general agreement with our view of the responsibility of professionals in matters of the kind involved here, he does not comment on the treatment meted out to Ms. Edgerton when she exercised that responsibility.

APPENDIX A

DUTIES OF POSITION (VIRGINIA EDGERTON)

Will serve as senior information scientist for the criminal justice steering committee grant program. Will assist the director by reviewing computer projects, evaluating computer programs and doing feasibility and cost/benefit studies. Will work with criminal justice agency personnel to create short and long range systems plans and do the detailed work on individual installation plans. Will be responsible for keeping the citywide information system plan current and liaise with DCJS to coordinate local and state planning.

7. CONCLUSIONS

On the basis of the information and principles discussed above, the investigating committee has arrived at the following conclusions:

- (1) Ms. Edgerton encountered in the course of her professional work a situation that might reasonably be considered as entailing a risk to the public safety.
- (2) She made a professional judgement that a detailed study of this problem was necessary.
- (3) No appropriate formal study was under way.
- (4) Ms. Edgerton conveyed her judgement to her superior in a written report, and this was rejected out of hand, with a warning not to take the matter further.
- (5) She then circulated a report on the subject to the next level of management in her organization.
- (6) Her action was in full accord with the letter and spirit of the IEEE Code of Ethics.
- (7) She was peremptorily discharged on the basis of the acts cited above.
- (8) This discharge constituted seriously improper treatment of a professional.
- (9) Ms. Edgerton's action (at considerable personal sacrifice) on behalf of the public safety was in the highest tradition of professionalism in engineering.

Investigating Committee (IEEE-CSIT Working Group on Ethics and Employment Practices).

Stephen H. Under (Chairman)

R. Jeffrey Bogumil

Joseph S. Kaufman



THE CITY OF NEW YORK
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CRIMINAL JUSTICE COORDINATOR

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February 16, 1978

Professor Stephen H. Unger
Chairman, Working Group on
Ethics and Employment Practices
229 Cambridge Avenue
Englewood, New Jersey 07631

Dear Professor Unger:

Thank you very much for sending to me your draft report in the matter of Virginia Edgerton. I appreciate the opportunity that you have given me to comment upon the report. As it happens, I am unable to make any contribution to the report in terms of factual material because, at the time the events described in the report occurred, I did not occupy my present office as Deputy Mayor for Criminal Justice and, accordingly, I have no first hand knowledge as to any of the facts concerning the dismissal of Ms. Edgerton.

For what it may be worth, I agree with your general conclusion that a professional person has a special responsibility to seek to be heard by principal policy makers on issues directly affecting the public safety. As your report makes clear, the pivotal issue in this regard is whether, notwithstanding the alleged frustration of Ms. Edgerton's efforts to communicate directly with members of the CIRCLE Committee, the SPRINT degradation issue was receiving attention by New York City policy makers. My understanding, which admittedly is secondhand, is that this issue was considered by the City in its planning for the development of a criminal justice information system. It is also my understanding that the issue raised by Ms. Edgerton is continuing to receive attention by the City and, of course, now that I am in office as Deputy Mayor for Criminal Justice, I will be concerned with this issue also.

Certainly, we do not intend to develop a criminal justice information system at the expense of any existing computer application which may affect the public safety.

Again, I thank you for the opportunity to examine your report and I commend you for your professional and thorough approach to the matter.

Sincerely yours,

Herbert Sturz
Herbert Sturz



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ABRAHAM D. BEAME
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NICHOLAS SCOPPETTA
CHAIRMAN

CESAR A. PERALES
DIRECTOR

August 12, 1977

Mr. Stephen Unger
229 Cambridge Avenue
Inglewood, N.J. 07631

Dear Mr. Unger,

Your follow-up letter of August 4, 1977 addressed to Mr. Robert M. Morgenthau has been received and I have been asked to direct the following reply to your office.

The termination of Ms. Virginia Edgerton from the CIRCLE Project was effected because 1) her distribution of the memorandum to the members of the CIRCLE Committee was in direct violation of policy established by me and 2) against expressly given orders that all communications sent to the members must be approved by the Project Director. Also, as her termination letter of June 24, 1977, of which I believe you have a copy states, the issues raised in her memorandum were at that time (and still are) under continuing discussion with the computer staff of the New York City Police Department and members of the CIRCLE Committee.

I would like to assure you that the policy makers in the City of New York are as concerned with public safety and the treatment of technical professionals as is your Committee. It is however imperative that an employee who is in a highly professional capacity, and has the exposure that accompanies a position dealing with top level policy makers, follow expressly given orders and adhere to established policy.

We hope that the above will provide satisfactory answers to the questions that you have raised.

Sincerely yours,

S. Kashmeri
Sarwar A. Kashmeri
Director, CIRCLE Project

SAK/rs

cc: Hon. Nicholas Scoppetta
Deputy Mayor for Criminal Justice

Hon. Robert M. Morgenthau
Chairman, CIRCLE Committee

Hon. Michael J. Codd
Vice-Chairman, CIRCLE Committee

Hon. Cesar A. Perales
Director, CJCC

MCC Report
In the Matter of Virginia Edgerton
(IEEE-7366040)¹
THE COMPLAINT

Ms. Edgerton was engaged as a consultant by the Criminal Justice Coordinating Council of the City of New York in December 1976, on a per diem basis, which employment was approved by the Office of the Mayor in January 1977. (Exhs. 1 and 3). Her duties as Senior Information Scientist included the review, evaluation, feasibility analysis and development of computer programs and associated plans, including liaison activities with the police department and the Criminal Justice Steering Committee (Exh. 2), each of which groups were utilizing or planned to utilize computer facilities available to the city for programs in operation or contemplated. SPRINT, an on-line police emergency dispatch system was in operation. PROMIS, a second on-line system, was in development for use by district attorneys throughout the New York City to aid in the prosecution of current litigation. The latter program was the responsibility of the Criminal Justice Steering Committee, the project chairman of which was Robert M. Morgenthau and whose project director was Sarwar A. Kashmeri, Ms. Edgerton's immediate supervisor. (Exhs. 1, 9).

Ms. Edgerton, during the course of her work, determined that concurrent use of the computer facilities available to the SPRINT and PROMIS programs raised, in her judgment, important questions pertaining to the possible degradation of the performance of the police dispatch program. (Exhs. 4, 5, 15). These concerns were expressed to Mr. Kashmeri in a June 3, 1977 memo from Ms. Edgerton (Exh. 5).

By memo of June 17, 1977 to the Criminal Justice Steering Committee transmitting a copy of the memo to Kashmeri, Ms. Edgerton advised its members of her continuing concern for the public safety in light of her evaluation of the possible consequence of overloading the computer facilities when the PROMIS program was fully developed and in operation. (Exh. 8).

Mr. Kashmeri, by letter to Ms. Edgerton dated June 24, 1977, terminated her employment, effective June 21, 1977. The stated reasons were that distribution of her memo of June 17 to the Steering Committee violated his policy that all such memos must be approved by him and the matters raised therein were then under discussion by the police department and members of the CIRCLE (Criminal Justice Information Systems) project. (Exhs. 9, 19). Shortly thereafter, Ms. Edgerton requested the project chairman for a hearing on the matter of her discharge (Exh. 12). There is no indication that such a review was afforded Ms. Edgerton.

THE IEEE CODE OF ETHICS

The foregoing circumstances suggest that the relevant portions of the code are:

1) Article I, §3: engineers shall "undertake engineering tasks and accept responsibility only if qualified by training or experience, or after full disclosure to their employers or clients of pertinent qualifications";

¹This matter was initially brought to the attention of the Committee on Social Implications of Technology, Working Group on Ethics and Employment Practices (IEEE-CSIT), in 1977. Ms. Edgerton, by letter dated 6/25/77 requested the assistance of CSIT (Exh. 10). The Working Group, composed of Joseph S. Kaufman, R. Jeffrey Bogumil and Stephen H. Unger, Chairman, investigated the matter extensively, and submitted its report to the Executive Committee of IEEE. The Executive Committee on May 21, 1978, referred the matter to the Member Conduct Committee established pursuant to Bylaw 112 (as amended) which was adopted by the Board of Directors in February 1978. This is the first member request for support submitted to the MCC.

2) Article I, §2: engineers shall be "honest and realistic in stating claims or estimates from available data";

3) Article III, §5: engineers shall: "assist and advise their employers or clients in anticipating the possible consequences, direct and indirect, immediate or remote, of the projects, work or plans of which they have knowledge"; and

4) Article IV, §1: engineers shall "protect the safety, health and welfare of the public and speak out against abuses in these areas affecting the public interest".

DISCUSSION

Ms. Edgerton's education and employment history, prior to her retainer by New York City in 1977, show her to have had more than a decade of relevant experience in computer programming and application, including seven years management responsibility with various employers. The City, itself, had been her employer for over a year in 1972-1973. (Exh. 11). That the City anticipated benefits from her work was made clear by Mr. Kashmeri's letter to her dated December 23, 1976 which declared "the project and the city... will benefit from the background and expertise that you will bring to this senior technical position." (Exh. 1). It is the opinion of the Member Conduct Committee (hereafter "MCC") that Ms. Edgerton was professionally qualified by training and experience to undertake the tasks assigned to her and accept the responsibilities of a senior information scientist (Exh. 2), thus satisfying the provisions of Article I, §3 of the Code of Ethics.

The Code also requires IEEE members to be "honest and realistic in stating claims or estimates from available data" (Article I, §2), coupled with the attendant responsibility to her employer to "assist and advise... in anticipating the possible consequences, direct or indirect, immediate or remote, of the projects, work or plans of which [she had] knowledge." (Article III, §5). From the information available to the MCC it is reasonable to conclude that Ms. Edgerton in her capacity as senior information scientist has adhered to these two obligations in the discharge of her professional responsibilities. She was selected to join the staff of the CJIS Project, of which Mr. Kashmeri was the Director, and Mr. Morgenthau the Chairman. (Exhs. 1, 3)². By memo of June 3, 1977 Ms. Edgerton, on the basis of information available from her activities and consultation with others not employed by the City (Exh. 4), advised the project director of the possible consequences which she anticipated from the proposed joint use of available computer facilities for both the SPRINT and PROMIS programs. In so doing Ms. Edgerton clearly was following the mandates of Articles I (Section 2) and III (Section 5) of the Code of Ethics.

We do not address the issue whether Ms. Edgerton's judgment was formed from more reliable or different information than that available to others working within the police department, for the CIRCLE (CJIS) project or other groups with which Ms. Edgerton had contact. Nor is it relevant to the Code of Ethics whether judgment of other responsible or cognizant persons differed. It was Ms. Edgerton's responsibility under the Code to advise her employer, the project director, of her judgments with respect to possible consequences, remote, immediate, direct or indirect. This she did.

The remaining question relates to Ms. Edgerton's conduct following the submission of her memo of June 3, 1977 to the project director. As discussed below, it is the opinion of the MCC that Ms. Edgerton adhered to the Code in her attempts to bring her concern to the attention of the Criminal Justice Steering Committee.

²In the relevant documentation, CJIS apparently is the Criminal Justice Information System, which is also referred to as the CIRCLE Project. For the purpose of this report, this project was chaired by Morgenthau and directed by Kashmeri.

Two elements are undisputed. Ms. Edgerton transmitted to the Steering Committee a memo substantially in the form submitted to the project director (Exh. 8) and shortly thereafter her employment was terminated by written notice from the project director. (Exh. 9). Was the transmittal to the Steering Committee consistent with the Code of Ethics? As an employed professional and IEEE member, Ms. Edgerton had the obligation in fulfilling her responsibilities to the New York community, to "protect the safety, health and welfare... in these areas affecting the public interest." (Article IV, §1).

This provision does not, of course, deal with procedures or management policies operative within the administrative organization of the City of New York. Rather, it pertains to IEEE member conduct. Further, "public interest" is undefined. The material reviewed by the MCC discloses,³ however, that the computer facilities and associated programs in operation and under development during the period Ms. Edgerton was employed by the City, were used by the police department in dispatching personnel in response to emergencies and was intended to aid, among others, the district attorneys in their work as litigators in the courts. The communications show that in one manner or another the scope of Ms. Edgerton's responsibilities were related to the activities of the Deputy Mayor for Criminal Justice, Mr. Morgenthau, the Criminal Justice Coordination Council and its Steering Committee, officers of the police department and state and local planning related to these groups. (Exhs. 1, 2, 5, 12, 21, 22). In this context, then, we conclude the "public interest" means the interest of the citizens to be served by effective law enforcement on the streets and in the courts. Though neither a police officer, nor a district attorney Ms. Edgerton's responsibilities and professional judgments did (or could) affect that public interest (immediately, remotely, directly, or indirectly). Indeed, the MCC is of the opinion that Ms. Edgerton's responsibilities placed her at the interface between the potentially divergent interests or competing needs for computer access of the police and the court. This circumstance enhances the important and relevance of Article IV, Section 1 of the Code of Ethics.

It is not to be inferred from this discussion that there are "abuses" existent in the programs within the City with which Ms. Edgerton had contact. Rather, Ms. Edgerton has, under Article IV, Section 1, a responsibility to the community to protect the safety and welfare. By her distribution of her memo to the Steering Committee she endeavored to have her views of an important, potentially adverse consequence affecting the public safety considered by the committee within the organizational framework of the City that had responsibility for the computer application contemplated.

In our view this action by Ms. Edgerton was reasonable in light of her apparent inability to resolve the matter with the project director. By first submitting her memo to the project director, the director was afforded an opportunity to consider her analysis of the potential problem. The Steering Committee was the cognizant and responsible group closest in relationship to the activities of both Ms. Edgerton and the project director. The memo initially submitted to the project director indicates that copies were directed to the official responsible for the relevant computer operations within the police department, an attorney assisting in the coordination and the committee responsible for programs under development for use by the district attorneys. (Exhs. 5, 21). At no time, apparently, was the subject of Ms. Edgerton's memo discussed among the project director, the author, and others to whom it was directed. There is no indication that Ms. Edgerton was requested to pursue the matter further, and little to suggest that the project director or other undertook to do so.⁴

³We accept as authentic all the documents furnished to the MCC for its consideration.

⁴The Chairman of the Working Group on Ethics and Employment Practices by letter (Exh. 24) to the police officer to whom her initial memo was sent sought information relevant to the assertion by the project director that the issues raised by Ms. Edgerton were under continuing discussion with the police computer staff and members of the CIRCLE (PROMIS) committee (Exh. 9). It is our understanding no reply (written or verbal) was made. Similar

The police commissioner, the director and the Chairman of the CIRCLE (PROMIS) project and the deputy major for criminal justice were asked to comment on the report prepared by the Working Group (IEEE-CSIT) prior to its submission to the IEEE Executive Committee. (Exh. 28). Only the deputy mayor replied. (Exh. 30). He responded that he was not the deputy mayor during Ms. Edgerton's employment and the period relevant to the inquiry, and declined to make any contributions to the report.

CONCLUSION

The MCC concludes that Ms. Edgerton has adhered to the IEEE Code of Ethics. It is our opinion (1) that her professional training and experience qualified her to discern the potential for degradation of the police-emergency dispatch system, (2) that she undertook reasonably to inform the project director of her concern, and (3) that her communication of this same concern to the Criminal Justice Steering Committee represented a good faith attempt to protect the community interests served by the computer applications about which she was informed. We believe the attempts were appropriately directed to those persons which were in part or whole responsible for the ultimate compatibility of the systems involved. Ms. Edgerton's adherence to the Code has jeopardized her livelihood. Moreover, it is our opinion that the action by those responsible for her employment termination compromised the discharge by her of her professional responsibilities.

COMMENT

The stated reason for Ms. Edgerton's termination was her distribution of the memorandum to the members of the CIRCLE committee "in violation of policy established by" the project director, and against express "orders that all communications sent to the members must be approved by the Project Director." (Exh. 19). The fact of termination and the reasons stated therefore are not in dispute. The Code of Ethics becomes relevant in this matter as the basis upon which to ascertain the reasonableness of the IEEE member's conduct, not that of the project director.⁵ Because we have determined that Ms. Edgerton's actions are consistent with the Code, however, there is presented a conflict of "policies," whose principles guiding professional activities in an employment relationship which we endorse, and those "policies" which guide the administration of, communications by, and supervision of employed persons.

This is not a circumstance in which the IEEE member, dissatisfied with the consideration or treatment afforded by supervisory personnel, took the issue outside of the confines of the employer's organization either in the search of relief of the member's personal grievance or to remedy a potential detriment to the public interest through publication in the media or otherwise. Under the circumstances, we are of the opinion that Ms. Edgerton's action was demonstrably a more professional approach in her relation to the employer. With benefit of hindsight, it is possible, of course, to suggest Ms. Edgerton might have persisted in her efforts to resolve the matters satisfactorily with the project director, thus eliminating the need to solicit participation by the Steering Committee, which effort led to her discharge. In a similarly facile manner, it can be suggested that the project director could have undertaken to deal constructively, and more responsively, to the substance of Ms. Edgerton's professional judgments. Neither approach, however, addresses what we

inquiries were transmitted to the project director (Exh. 13) and the Chairman of CIRCLE (Exh. 18). Only the director replied (Exh. 19), but he did not provide further information as to the nature, extent or outcome of discussions to which his letter discharging Ms. Edgerton referred.

⁵The Code of Ethics would be relevant to the project director (if an IEEE member) should a complaint be submitted alleging violation of the Code.

perceive to be the focal point in this matter. Was it reasonable to resolve what apparently was a matter of divergent judgment by the discharge of Ms. Edgerton? We conclude that it was not. We have found Ms. Edgerton to have acted in a manner consistent with the Code of Ethics. We have found no indication that the discharge was influenced by any circumstance other than the distribution of the memorandum. The prohibition against such distribution to the Steering Committee stemmed from a policy prescribed by the project director. No matters have been brought to our attention that explain the need for, the purpose or efficacy of such a policy. Neither has it been shown that such a policy was existent elsewhere among the relevant committees, directors or staff serving to implement the subject computer applications. Finally, we believe the circumstances of the situation described herein indicate the present need of employers to develop a

means whereby professional employees can raise and be afforded review of their judgments, responsibly formulated, so as to avoid their summary discharge for violation of "policy," when the result of such policy serves to prevent the dissemination and reasonable consideration of professional opinions related to the successful functioning of systems or equipment involving safety and welfare considerations, directly or indirectly, affecting the public interest of a community of citizens to be served by such systems or equipment.

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June 1978

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**POLICY IMPLICATIONS OF THE
TOMOGRAPHY (CT) SCANNER**

The rapid spread of computed tomography (CT) scanners, the frequency of their use, and their costs have combined to focus attention on the role of diagnostic medical technologies in the increase in medical care expenditures during recent years, the Office of Technology Assessment (OTA) reports.

OTA is the agency of the U.S. Congress which analyzes applications of technology and their impacts—beneficial as well as adverse—on society. At the request of the Senate Committees on Finance and Human Resources, OTA studied CT scanners as illustrative of many important issues in health policy.

CT scanners combine X-ray equipment with a computer and television-like tube to produce cross-sectional images of the body. CT scans permit doctors to make more accurate diagnoses. Compared to older technologies, such as pneumoencephalography, CT scanning often improves the safety and comfort of patients.

Developed in Britain in the 1960's, the first CT scanner was installed in the United States in 1973. By the end of 1977, some 1,000 scanners were in use throughout the Nation. To the extent that CT scanners cause problems, they lie not with the existence of the technology but in its appropriate use.

CT scanners are expensive to buy and operate. They average about a half million dollars apiece, although several manufacturers plan to market scaled-down versions for \$100,000 or less. Estimates of their annual operating cost ranged from \$259,000 to \$379,000 for 1975 and 1976.

The widespread diffusion of CT scanners was aided by current public and private methods of financing medical services, which promote the use of expensive technologies, the OTA report concludes.

Yet, OTA found, no public sector agency now systematically assesses medical technologies for their efficacy or safety. In the case of CT scanners, no evaluation was conducted of their place in medical practice or their relationship to other medical services prior to their widespread adoption.

"As is typical for medical technologies," OTA says, "well-designed, prospective studies of the efficacy of CT scanners were not conducted prior to diffusion. No formal process, public or private, has existed to ensure that studies of efficacy of most technologies are conducted and that data are collected and analyzed."

The result, according to the OTA report, is that planning agencies, Professional Standards Review Organizations, third-party payers, and the medical community lack an adequate basis for judging the use of technologies.

The incentives for doctors to use diagnostic tests are very powerful, OTA found. Fee-for-service payment pays doctors for each additional test and cost-based reimbursement pays hospitals for their costs. Financial incentives thus promote the use of additional tests, not a choice among alternatives. In addition, the use of third-party payments insulates both doctors and patients from the costs involved and doctors have come to rely heavily on technology because of their training and concern for malpractice suits.

The widespread adoption of CT scanners is but one part of increasing reliance by the medical community on diagnostic technologies, the OTA report says. "During the past three decades, a virtual explosion has occurred in the development and use of diagnostic technologies."

Copies of the OTA report, "Policy Implications of the Computed Tomography (CT) Scanner," are available from the U.S. Government Printing Office the GPO stock number is 052-003-00565-4; the price is \$4.00.

CSIT MEETING, MARCH 3, 1979

The next meeting of CSIT will be held on Saturday, March 3, 10am to 3pm in New York City. CSIT meetings are open to all IEEE members, and we hope you will take this opportunity to become better acquainted with us and with our activities. Light lunch will be provided. If you plan to attend (and to find out the precise location of the meeting), please notify Dr. I. Engelson, IEEE, 345 East 47th Street, New York, NY 10017, (212) 644-2150.

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