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THE PEOPLE-MACHINE

**The First Report on a Computing Device Secretly Designed for the
Democratic Presidential Campaign—and on Its Consequences for Political Strategy**

*T H E model of an experimental airplane,
when placed in a wind tunnel which
simulates flight conditions, provides vital in-
formation about the future behavior of the
actual plane without risking a test pilot's life.*

*"Weather-machines" have been developed
which react mathematically the way weather
usually acts in reality. Vast quantities of care-
fully weighted past data—a model of the world's
weather—are stored in the memory cells of a
computer. When current weather information is
added, the weather-machine simulates future
weather behavior and enables trained analysts to
make long-range forecasts many times more re-
liable than older techniques of meteorology.*

*Can something akin to these things be done
where people are concerned? What if one could
fuse the talents of the electronic computer—
memory, speed, accuracy—to those aspects of
human behavior revealed by public-opinion poll-
ing? What if one could devise a mathematical
model of the American public and feed it into a
computer? Wouldn't this be a "people-machine"
that could simulate future human behavior?*

One of the world's first practical people-
machines—feeding a mathematical model of the
United States electorate into an IBM 704 com-
puter—was put to work early in the 1960 Presi-
dential race to provide information for John F.
Kennedy's inner circle of campaign strategists.
The machine was the creation of a new enter-
prise known as The Simulmatics Corporation
and was nourished by the Advisory Council of
the Democratic National Committee as well as
the Kennedy organization. Its success opens up
possibilities for business and government as well
as electioneering that can hardly be overesti-
mated. It also raises questions about the future
of free societies that won't be easy to answer.
As Dr. Harold Lasswell, professor of law and

political science at Yale University, said recently:
"This is the A-bomb of the social sciences. The
breakthrough here is comparable to what hap-
pened at Stagg Field."

Reports evaluating the people-machine's com-
putations were delivered to the Democratic cam-
paign manager, Robert Kennedy, on August 25,
almost eleven weeks before election day and six
weeks before the first televised debate between
Kennedy and Nixon. One section of these re-
ports described a simulation* of future human
behavior in terms of voters' reactions to the
religious issue. It was the first simulation of its
kind.

The people-machine considered this question:
What would happen on election day if the issue
of anti-Catholicism became "much more salient"
in the voters' minds? The answer would give the
campaign strategists a scientific basis for deciding
how to deal with the issue. Usual means for
determining public opinion—polling and trend
forecasting—could not give an answer because
this was a *what if* question—one concerned with
a change from the present situation. Indeed,
throughout the campaign, the so-called "bigotry
vote" was the mystery question and chief
dilemma of pollsters. The people-machine, how-
ever, gave its answer on August 25.

The Simulmatics report on "the consequences
of embitterment of the religious issue" detailed
a simulation of Kennedy's vote in percentiles,
regionally and on a state-by-state basis. These
numerical estimates were compared to the results
of a poll taken for Simulmatics by Furst Surveys,
August 13-18. Both the poll and the simulation
showed Kennedy trailing Nixon, but the dra-
matic revelation was a close parallel between the

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*"Simulation" in the language of Simulmatics
means an estimation of hypothetical behavior; it is
make-believe on mathematical principles.—*The Editors*

Simulmatics picture and the actual poll. This suggested that exacerbation of the religious issue probably would not damage Kennedy any more than he had already been damaged, once his nomination was assured. Such a conclusion was made self-evident when both the Furst sampling 'and the simulation were compared to polls taken before the Democratic convention when Kennedy's popularity was at a peak. In the Simulmatics regional report, the percentages for Kennedy looked like this:

REGION	Pre-convention poll results	Furst Surveys Aug. 13-18 poll	Religious issue Simulation results
East	53	54	51
Border	55	42	49
South	70	47	47
Midwest	52	48	45
West	54	44	46

Comparing these computations, the Simulmatics report to Robert Kennedy came up with this interpretation:

. . . Kennedy today has lost the bulk of the votes he would lose if the election campaign were to be embittered by the issue of anti-Catholicism. The net worst has been done. If the campaign becomes embittered he will lose a few more reluctant Protestant votes to Nixon, but will gain Catholic and minority group votes. Bitter anti-Catholicism in the campaign would bring about a reaction against prejudice and for Kennedy from Catholics and others who would resent overt prejudice. It is in Kennedy's hands to handle the religious issue during the campaign in a way that maximizes Kennedy votes based on resentment against religious prejudice and minimizes further defections. On balance, he would not lose further from forthright and persistent attention to the religious issue, and could gain. The simulation shows that there has already been a serious defection from Kennedy by Protestant voters. Under these circumstances, it makes no sense to brush the religious issue under the rug. Kennedy has already suffered the disadvantages of the issue even though it is not embittered now—and without receiving compensating advantages inherent in it.

THE KENNEDY "IMAGE"

HERE was obviously the informational basis for a clear-cut tactical decision. In 1928, Al Smith had, for all intents and purposes, tried to avoid the religious issue. Kennedy could follow Smith or he could pay "forthright and persistent attention" to it. (Nixon correctly understood the nature of the religious issue and did his best to minimize it during the campaign.) No one in Simulmatics was privy to the decisions of the Kennedy strategists, nor have I had any

access to them. It is not known what, if any, influence the Simulmatics simulation had in the development of Kennedy's approach to the religious issue after August 25. One might guess —on the basis of what one knows about Kennedy's personality and his experience in the West Virginia primaries—that his campaign strategy was already oriented toward forthrightness and persistence. The concept of simulation was perhaps too new to be completely trusted. It seems that, at most, the simulation may have lent some psychological support to those Kennedy strategists who favored its conclusions anyway. In the aftermath of the election, however, it is apparent that the interpretation of the simulation was verified by events. While the religious issue did not dominate the campaign, it did become exacerbated. Kennedy handled it with forthrightness and persistence and, most observers have agreed, in a way that produced a net gain for him.

In addition to the process of simulation, the people-machine provided much important information about the "images" of Kennedy and Nixon and about voters' attitudes toward other issues. This information came from the computer's memory which relates millions of isolated bits of data in a way that human minds could do if they had months and years to make all the necessary calculations. It is difficult to describe this process without including here a raft of statistical charts. Rather, here are some examples from the report to Robert Kennedy that show the type of tactical evaluations made possible by the swift availability of such information:

On the upcoming TV debates: Nixon has been less effective on TV than Kennedy. The crucial TV debates are therefore a risk for him. Should he be able to trap Kennedy into approaching the debates at his own level of super-coolness, he can "win" the debates. The danger to Nixon is that Kennedy can make use of his more personable traits—including a range of emotions such as fervor, humor, friendship, and spirituality beyond the expected seriousness and anger —and thus cause Nixon to "lose" the debates.

On the foreign affairs issue: . . . This issue is Kennedy's area of greatest weakness, but it is also an area in which he has positive opportunities. . . . Should he or should he not attack the Republican [foreign affairs] record? We conclude that the answer is: he should attack. As part of an aggressive, partisan campaign, Kennedy can materially affect party feeling among the electorate and enhance his own image by: (1) talking and acting about foreign affairs in a way which conveys a sense of knowledge and power; (2) unmistakably exposing the degeneration of prestige and power which the United States has suffered under the Republican Administration. . . .

On Nixon's probable style of campaigning: Nixon can be hurt if his campaign style does not capitalize on his personal assets (self-confidence, competence, sober-mindedness). Should Nixon campaign intensely, but above party strife and personal attack . . . he can gain among the undecided Democrats and Independents.

[Simulmatics might have stated the converse here with as much truth. That is, Kennedy would be able to hurt Nixon if he was able to draw personal attacks upon himself. By taunting Nixon in the last weeks of the campaign, Kennedy seemed to be following this line of reasoning. Nixon took the bait. He did attack Kennedy, using such words as "ignoramus," and probably lost votes by dissipating his "assets."]

Like the simulation of the religious issue, these evaluations of computer data offered a firm basis for decision-making. There is, again, no way of knowing which, if any, decisions were based upon them, but in retrospect, the evaluations seem to have foreshadowed the direction of the campaign to an uncanny degree.

THE "WHAT IF" MEN

ONE may be tempted here to invoke the shades of Orwell and Wells, but the people-machine is, after all, a creation of men. It merely produces neatly typed rows of numbers which men must evaluate. As it happens, only a few men in the country have mastered both the computer technology and the social theory necessary to operate the machine. Three such men and a far-sighted businessman were responsible for the Simulmatics political people-machine.

In the fall of 1958, Dr. William McPhee, a director of Columbia University's Bureau of Applied Social Research, conceived of the theory needed to build a computer model of the U. S. television-viewing public. His would not be the first model of human behavior ever built; several social scientists had developed experimental models and others had worked out valuable concepts of model building. But McPhee had reason to hope that his model would have practical value. He offered it to Edward Greenfield, a New York businessman and former personal aide to W. Averell Harriman. In turn, Greenfield arranged for McPhee to discuss the project with Dr. Ithiel de Sola Pool, chairman of the Political Science Section of the Department of Economics and Social Science at Massachusetts Institute of Technology and a consultant to the Defense Department.

McPhee, Pool, and Greenfield decided to forgo the TV project, for which funds were likely to be unavailable. Instead, at Greenfield's suggestion, they agreed to build a model of the U. S. electorate for which the required $65,000 might be found among Democrats in New York City. Early in 1959, a third social scientist, Dr. Robert Abelson, professor of psychology at Yale and a designer of computer models, joined the group. The four men incorporated themselves, and McPhee, Pool, and Abelson set about planning the political model.

The model's basic premise was related to that of the science of public-opinion polling: People are predictable. Polling had reached a high level of accuracy in reporting the current distribution of opinion in the community. But Gallup and Roper had found individual behavior to be so sensitive that, as in the case of forecasting elections, polling had to be done as close to election day as possible. Therefore, polling was essentially static. Interviews could be punched on IBM cards, tabulated, and evaluated. Projections could be made with a small degree of error (*e.g.*, the 1960 election projections). Yet polling could not get around the fact that each IBM card still represented an individual at a given moment in time. A poll could provide information on which a politician or a businessman could base a decision about the future, but nothing in a poll would project the change that might occur under new circumstances. What was needed was something that could simulate new circumstances and test the result of a decision before it occurred in real life.

To break through the limits of polling, McPhee, Pool, and Abelson introduced the kind of speculations about human dynamics and change used by social scientists in their more creative and literary moments. The Lynds, who wrote *Middletown* in 1929, in effect worked from a "model" and used their own brains as computers. Their conclusions were far more than reports on the results of a survey. They tried to answer *what if* questions. They started with facts they had observed, organized, and tabulated, but then they attempted to "compute" the nature of change. They made an effort to understand, given the facts, how people might behave in varying future situations.

Now, using computer technology, the Simulmatics group was able to return, better equipped,

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to the dynamic method of the Lynds. They could lay out their own "Middletown"—a model of the electorate, the buying public, or the viewing audience—in the memory cells of a computer. They could use much of the data that had been so painstakingly collected by pollsters over so many years. With precision, speed, and efficiency, they could define groups in the population whose past behavior could be clearly identified and could permit the computer to play out alternative courses of events.

In the spring of 1959, Greenfield sent a memo to Thomas K. Finletter, former Secretary for Air in the Truman Administration and a member of the Democratic Advisory Council, in New York. "It is possible," the memo said, "to develop a computer program which will predict the result of alternative campaign strategies from limited public-opinion-poll data and do so in a matter of minutes with great detail about different states and groups of voters." (The use of the word "predict" was not precise. The people-machine does not predict, but rather estimates behavior in hypothetical situations.)

Finletter circulated the memo and in May the Advisory Council met with the Simulmatics group in Washington, with Paul Butler, then chairman of the Democratic National Committee, presiding. The Council endorsed the proposed project and encouraged a private group in New York to spend $35,000 for the initial development phase. McPhee, Pool, and Abelson had one stipulation about accepting the money. The Council had to agree that anything produced by the machine would be made publicly available after the 1960 election. When this condition was accepted, the real work began. Says Pool: "It was extraordinary that a group of practical politicians would go along on a sheerly speculative venture in science. It was a kind of Manhattan Project gamble in politics."

THE BIRTH OF A MODEL

ABELSON assembled the model of the U. S. electorate during the summer of 1959. An additional $30,000 was provided to finish the job that fall after the project was reviewed and approved by consultants to the Advisory Council —Dr. Lasswell; Dr. Paul Lazarsfeld, chairman of the Department of Sociology at Columbia; James Coleman, chairman of the Department of Social Relations at Johns Hopkins; and Dr. John Tukey, Princeton mathematician. The Simulmatics people-machine was ready for use in April 1960, but by this time there was so much

confusion among Democratic politicians inside and out of the Council that no one was prepared to take full advantage of it.

The model of the electorate consisted of more than 100,000 interviews with eligible voters. Many of these interviews came from the Roper Public Opinion Research Center at Williams College, one of the few places in the country where past poll data is efficiently stored. The total represented the results of sixty-six nationwide opinion surveys made since 1952, including fifteen conducted in the prior eighteen months. Each interview in this "survey bank" had to be evaluated, weighted and balanced, and coded so that different methods of asking the same question in a Roper or a Gallup poll would mean the same thing in the machine.

With Pool, Abelson divided the 100,000-plus individual interviews into 480 groups—"voter-types"—and demographic as well as political facts about each group were prepared for storage in the computer's memory cells. Here are examples of voter-types as they appear in the model: *Eastern, rural, well-off, Protestant, male; Midwestern, small-town, poor, Catholic, female; Western, metropolitan, Jewish, male.* As many as five—and in a few cases, eight—variables identified each group in the model. Then, again for each group, past voting behavior, record of turnout at the polls, and attitudes and opinions on as many as *fifty* issues were specified. Among the issues were *civil rights, anti-Catholicism, McCarthyism, the H-bomb,* and the like.

All this data—over six million different pieces of information—was consolidated and transferred to a memory tape. Thus, the model was born. In the computer, this material could be scanned in about forty minutes. Printed, it would fill a book the size of the Manhattan telephone directory. Properly programmed, it could not only produce information for the kind of tactical evaluations just quoted, but also, it could *simulate.* The Simulmatics religious-issue simulation of August 25 is proof that (a) the machine works and (b) it works on "old" data. The hypothetical campaign and election result, assuming embitterment of the religious issue, was completely developed from data in the survey bank collected by April 1960.

Before the Democratic convention convened, Simulmatics did manage to produce one report: on the Negro voter. This report described the threat of massive Negro defection from the Democratic party, especially in the big cities. The report suggested that defections might be minimized by a strong civil-rights plank in the

Democratic platform. The impact of the report is not known, but it was in the hands of Chester Bowles and other members of the platform-writing committee before the strong plank was written. After Kennedy's nomination, interest in the people-machine was renewed. On August 11, Robert Kennedy, as campaign manager, ordered the reports from which I have been quoting. Under Pool's supervision, they were produced in fourteen days at a cost of $18,000.

FEEDBACK FROM THE VOTERS

NOW that the campaign is over, Simulmatics (as might be expected) is going into the commercial field. Here, too, the ramifications of the people-machine are immense. Just as the politician can use its information to help decide campaign strategy, so can businessmen use it to develop marketing strategy. The ultimate use of the machine, however, may not be in election campaigns or the market place, but in government. It will speed up the process of discovering a consensus concerning the goals of our society. It will compel leaders to refine their decisions because they will at last have accurate information about public opinion.

As Pool says: "The classic theory of democracy has always assumed that effective democratic decision-making requires that human beings have as much information as can be available. All that machines do is provide more data to more people more quickly than otherwise. Questions have been raised about the morality of using advanced computer programs in political research. It seems ironical that people should view decisions made on the basis of confused guesses about what the public wants as more democratic than decisions made on the basis of careful compilations of information.

"The research we have done for the Democrats was focused on the issues and what they mean to the voters. Its purpose was to make it possible to conduct a campaign in the way an intelligent democratic discourse should be conducted—by debating the issues that matter to people and explaining to them things they wish to understand.

"What we have, in short, is a device which could give a national campaign more of the quality of a traditional town meeting. Mass democracy in the hectic environment of the mid-twentieth century tends to lose this quality precisely because there is no feedback from the voters to the politicians.

"Machines can do nothing but speed up communication. By so doing, they restore the possibility of ready discourses about important matters in large societies."

Doubtless, the introduction of the people-machine must pose many questions that neither scientists like Dr. Pool nor anyone else can yet answer. If, in a free society, information is power, how do we prevent tampering with the data provided by the machine? As we approach a consensus of opinion, what happens to freedom and spontaneity? As we seek more and more data for the machines, can we maintain our traditions of privacy? How much pressure toward conformity will be created by the machine and what will happen to taste and style and quality in a market influenced by it? What, finally, is the relationship of the people-machine to human dignity?

"You can't simulate the consequences of simulation," says Dr. Lasswell. "We must use our minds for that. I know this already—if we want an open society in the future, we are going to have to plan for it. If we do, I think we have a fighting chance."

A SIGH FOR CYBERNETICS

Dr. Norbert Wiener, a pioneer in the use of electronic brains, warns that computing machines, now working faster than their inventors, may go out of control and cause widespread destruction.—*News Item*

> THINKING machines are outwitting their masters,
> Menacing mankind with ghastly disasters.
>> These mechanized giants designed for compliance
>> Exhibit their open defiance of science
> By daily committing such gross misdemeanors
> That scientists fear they'll make mincemeat of Wieners.

—Felicia Lamport