Politics and The Tools of Artificial Intelligence

By Denny Rock

In 1776, Thomas Paine sold a half-million copies of Common Sense to a nation only three times that size. His goal was to awaken that "human mass of sense lying in a dormant state" to fight for political change. Today, tremendous changes in advanced computing technologies are giving rise to a similar challenge of democratic empowerment. A number of major political figures and trends are already employing these resources:

- Reinventing Government: The report by Vice President Al Gore's National Performance Review Commission paints a picture of an electronic government. The thrust of the Gore report is that a change in the government employee culture through business process re-engineering techniques and new computer technologies will result in better delivery of services. While cutting red tape, making more federal data available, and decentralizing decision power are worthy goals, participatory democracy involves more than using CD-ROMs as customers of government.

- War Room: The documentary about Bill Clinton's 1992 presidential campaign shows James Carville and George Stephanopoulos in their glory, making rapid political marketing decisions and generating sound bites. The film portrays computers only as number-crunchers for statistics, but computers are actually playing an active role in electoral decisions by analyzing the chances of winning and allocating resources.

- Democracy for Hire: An industry has grown up in Washington around sponsored scholars devoted to creation of facts, opinions, and expert analysis. "That is the principal function of all the enterprises along Washington's K Street," comments author William Greider. "The public-relations agencies, the direct-mail companies, and opinion-polling firms work in concert with the infrastructure of think tanks, tax-exempt foundations, and other centers to churn out reams of policy ideas for the political debate." þMedia Politics: This label describes the rising influence of the press and television industry as the principle gatekeepers of political debate. The symptoms include: Other channels of political information are almost nonexistent for many Americans; business economics remain central in many decisions affecting journalism; and media news is reactive, event-driven, and fragmented. S. Hess, a senior fellow at the Brookings Institution, based in Washington, D.C., claims that on-line computer services will contribute further to the fragmentation of news reporting, as consumers will limit their exposure only to the affairs that match their interests.

- Electronic Democracy: This term is associated with the tremendous growth in networks, which are oriented toward spontaneous communication among citizens. However, this term sometimes carries simplistic connotations, such as a populist appeal "to regain control by the people over the communications technologies." There were numerous battles this year over Congressional bills for the design of the National Information Infrastructure (NII). While NII may increase public access to communications, NII does not guarantee democracy any more than building a new union hall guarantees a strong trade union.

How will computer technology affect future politics? This short survey is not meant to be a soapbox for any particular political viewpoint. Instead, it stumps for the application of Artificial Intelligence (AI) technology to expand public involvement with information-driven politics, the politics of knowledge, not necessarily the politics of winning elections. I will point to some potential AI

contributions: political models, tools to search for and assess political facts, tools to frame political concepts, and also tools to expand electronic discussion.

All Models Are Local

Computer models and simulation are needed to track even the roughest outlines of the increasingly complex political landscapes and to understand the dynamics of the underlying power realities. Political models achieve two goals: They locate candidates in what R. Joslyn calls "issue space" by analyzing the content of candidate appeals and making informed guesses about candidates' programmatic behavior once in office. They also attempt to understand the role of partisanship for example, the primary win by former Illinois Representative Dan Rostenkowski, even though he later lost his seat, was not influenced by issues as much as by perceived steadfastness and party loyalty.

One approach to modeling the behavior of political parties uses the artificial adaptive agent structures developed by John Holland and John Miller in the Echo class of models for complex adaptive systems. Echo models let researchers explore the relationship between optimization and adaptation and test hypotheses about the underlying environment. Echo's ability to represent the "unconscious internal models" might be useful for modeling the political thought processes of citizens. Likewise, Echo's ability to represent "aggregate behavior" might be useful for modeling the organizational evolution of a political party itself. Echo is available via anonymous ftp to ftp.santafe.edu for the file /pub/Users/terry/echo/Echo-1.0.tar.Z).

Smart Whistles and Watchdogs

AI tools for knowledge discovery are used to detect patterns of fraud in credit card and business applications. Can similar approaches be used in the political and governmental domains? Taxpayers Against Fraud (TAF), a Washington, D.C.-based nonprofit organization, has recovered more than $588 million for the U.S. government since 1986. TAF uses the whistleblower' law to uncover fraud. This law originated when Abraham Lincoln cracked down on war profiteers who filled musket crates with sawdust and sold the same horses to the cavalry time after time.

Lisa Hovelson, executive director of TAF, says that computers have been used only to calculate damages after fraud details are known, not at the front end for data discovery or analysis, for which TAF essentially has relied on inside persons. "We have discussed and support the need for such AI capability, but it is still in the future for us," says Hovelson. An example of U.S. government interagency exchange of information, where data correlation is required, suggests Hovelson, is the IRS and the Department of Education for defaulted student loans. Another example is the Department of Customs and the duties paid on products coming into the United States, compared to the prices charged to the government.

Yet another potential application involves watchdogs for vote fraud. A recent case involving a close election loss for the Pennsylvania State Senate by Republican Bruce Marks kept the Philadelphia news media humming for months. The election had slipped by the watch of the nonpartisan group, which manually inspects ballots and allegations of election impropriety. A pattern of ballot fraud and forgery was detected after citizens protested that their names were on erroneous absentee ballots. A Philadelphia Inquirer editorial called for "modernizing voter registration information by computerization including digitizing signatures."
Forensic Linguistics Reliable information is essential for a free-thinking public to arrive at opinions. New computer applications can assist in the related functions of news understanding, text retrieval, and

the acknowledgment of bias or intentional ambiguity. Such applications could assist journalists, as well as citizens.

The Arlington,Va. based Advanced Research Projects Agency (ARPA) has sponsored a series of Message Understanding Conference (MUC) competitions.The goal in MUC 3 concerned the extraction of information from news articles about the topic of terrorism. MUC solutions have ranged from in-depth natural-language understanding capabilities to skimming techniques that aim to avoid the knowledge-engineering bottleneck associated with many text-processing systems.

Mainstream journalism in the wire services the primary source for most of the 1,800 daily newspaper, 11,000 radio, and 2,000 TV stations in North America is characterized generally by neutrality and balance. Exceptions exist, and the detection of linguistic bias in the news media is very important. A few of the news services that focus on the exceptions include FAIR (Fairness & Accuracy In Reporting), LOOT (Lies Of Our Times, Institute of Media Analysis), and Critical Intelligence (Boardroom Inc.), all based in New York.

Fuzzy Detective Tools

L. Bennett suggests that implicit handling of policy information by the news media would not be a problem for democracy if members of the public approached the news as detectives, looking for hidden clues upon which to build their understanding about a situation. Libraries already use electronic-search capabilities for information filtering, document location, and fact extraction. Software tools that achieve these tasks include Gopher, Wide Area Information Servers, Archie, and AppleSearch. While these first-generation tools have been limited by keyword requirements, the commercial development of fuzzy search' capabilities in a few expensive tools is a harbinger.

One fuzzy search' tool vendor is Excalibur Technologies Inc. (San Diego, Calif.). Excalibur's document-retrieval products have migrated to client/server architectures and will be offered by late 1994 as an unbundled set of advanced programming tools for embedded applications. Metrics given by Excalibur include search 200,000 pages of text in ten seconds, learn new input data at a rate of five megabytes in 160 seconds, and create index memories a third of the size of the original text.While Excalibur's pattern-recognition tools have been applied to text and picture images, multimedia applications with digital data of voice or video are yet to be explored in this domain.

Unlike many traditional search-and-retrieval systems that discard certain words such as "the," Excalibur's approach can search on concepts or every single word. For example, "The" is a common Vietnamese name and is featured prominently in many Defense documents of the Vietnam War era. The Library of Congress uses Excalibur's tool to scan in Spanish-language law journals from around the world. The Defense Intelligence Agency's Counter-Drug Directorate uses this tool to scan in articles from Spanish newspapers and search for words and images. The U.S. Department of Defense's Decision Systems Management Agency uses this tool to process records from the former Soviet Union, searching for clues related to U.S. prisoners of war.

Minsky to Mills

Marvin Minsky proposed frames as data structures for representing knowledge and expectations, which would let a computer system impose coherence on incoming information. Minsky's paper, "A Framework for Representing Knowledge," was influential among AI researchers and inspired the development of many high-level knowledge-representation languages. Representation tools such as inheritance, demons, default values, and perspectives led to procedures that make assumptions, tell what is relevant, and look for information. P. Winston used the example of news to describe frames, observing that news is an easy domain for frame finding and instantiation.

Meanwhile, political scientists have used the term "frame" for many years in reference to political function and content, void of computer representations. The idea of a political frame dates back to P. Converse's 1964 theory of "mass belief systems," H. Lasswell's 1941 study of "attention frames" in propaganda, W. Lippman's 1922 work on "public opinion," and J. S. Mill's 1861 theories on "minds of higher grade" and "democracy as government by discussion" to serve the discovery of truth and to cultivate intelligent individuals."

J. Farr defined a political frame as "a central organizing idea or story line that provides meaning to an unfolding strip of events, weaving a connection among them. The frame suggests what the controversy is about, the essence of the issue. Frames consist of metaphors, exemplars, catchphrases, depictions, and visual images; they often include a rudimentary causal analysis and appeals to honored principles. We believe that frames lead a double life, that they are structures of the mind that impose order and meaning on the problems of society and that they are interpretative structures embedded in political discourse."

Consider the following three examples of frames used in reference to the attitudes expressed in court decisions, speeches by prominent public officials, and opinions in news sources and political journals. The first example concerns civil rights. Supporters of affirmative action typically have referred to the need for "remedial action," while opponents have argued that affirmative action constitutes "unfair advantage" or "reverse discrimination." One debate now before the Supreme Court over the shapes of congressional districts of "majority minority" constituency has frames of "tyranny of the majority" and "racial gerrymandering."

A second example concerns the events surrounding the 1991 Persian Gulf conflict. The U.S. public was ignorant of general knowledge about the Persian Gulf region and many specific details. Proper framing could have alerted the public to the increasing dangers before 1991, but fragmented stories were left to stand on their own. If the public had been informed properly, the armed conflict still might have been the same. The result, according to Bennett, was unchallenged manipulation of news before the conflict and a state of political impasse afterwards. MIT linguistics professor Noam Chomsky calls this manipulation "the manufacturing of consent."

A third example concerns the debate over President Clinton's 1994 State of the Union address frame of "three strikes and you're out" for lifetime imprisonment of repeat criminals. While the rhetoric is wildly popular, it almost certainly will not do what people want reduce their risk of being victims of random violence, according to Jerome Skolnick, president of the Society of Criminology (University of California at Berkeley). The fact is that violent crimes are committed disproportionately by young men aged 13 23; their criminal activity diminishes sharply as young offenders enter their 30s. Skolnick suggests that this "bumper sticker" solution will result in a very expensive prison-building program, while not concentrating on the young who are entering criminal careers.

The creation and use of political frames is more than just vocabulary; it involves symbols, emotions, and notions of justice. Information becomes important when it is relevant to a common purpose, which is built on a set of values and relationships. Facts are assembled and interpreted differently, depending on the frames and broader system of explanation. This development, in turn, contributes to the way citizens participate in debates and the formation of public policy.

Farr warns that elite frames can serve manipulative interests of political elites, in which leaders do most of the conversing and democratic discussion is reduced to campaigning for elections and the casting of votes. He comments that "many political frames are more nationalistic, patriotic, heroic, theistic, familistic, or individualistic than they are democratic." Farr suggests that even the term "democracy" has been "introduced trivially, incoherently, or manipulatively into all sorts of domestic debates, military interventions, consumer advertisements, and television specials."

Creation of computer applications to enhance democratic discussion eventually will use these frame concepts. The old politics often depicted as canned debates and public spectacle is becoming unacceptable to an intelligent populace. New politics demands semantic understanding and identifying the chains of reasoning. These goals require building new tools and networks for the next generation of machine politics.

Back to Turing

One central issue is encryption, a topic with deep AI roots. Although Alan Turing is probably best known in computing circles for his Turing Machine and Test, he developed specialized electronic computation engines to decode German military code, which let the British withstand the Nazi air force. The current encryption controversy involves many players: the National Security Agency, FBI, NIST, telecommunications companies, software vendors such as General Magic, civil liberties advocates, the cypherpunks, and CPSR but no Nazis!

Meanwhile, information needed by the public for political analysis is increasingly available through the networks. A few examples: 1994 marked the first time the budget of the U.S. government is available in electronic format. You can now e-mail the president@whitehouse.gov. The Library of Congress is on-line. UseNet has a range of newsgroup topics, and users can post messages or merely lurk. All bulletin boards seem to be gravitating toward the Internet.

Networking also has proven to be an effective tool for grassroots organizing. For example, SeniorNet, the San Francisco, California-based network with health care as the prime concern, has more than 10,000 individuals. Several city governments for example, San Antonio are experimenting with the electronic town meeting discussion model, which was an idea originally proposed many years ago by Buckminster Fuller. Trade unions are going electronic, although there is no example yet of a union struggle being won or lost on the basis of electronic communication.

A key issue that remains is how to structure wide-scale electronic debate at various levels that is democratic, interactive, and inherently controversial. Can electronic discussion be organized and protected from dominance by lobbyists, special interest politicking, and the dirty politics of character assassination and mudslinging, while protecting the right of free speech?
One environment that begs for experimentation in political exchange and consensus is the World Wide Web, a distributed hypertext-based information system. With viewers like Netscape and Mosaic to unburden users with the technical details, users can focus on interacting with the information itself.

Omnicompetent Citizen

In 1925, Walter Lippman observed, "Although public business is my main interest, I cannot find time to do what is expected of me in the theory of democracy; that is, to know what is going on and to have an opinion worth expressing in every question which confronts a self-governing community. And I have not met anybody, from a President of the United States to a professor of political science, who came anywhere near to embodying the ideal of the sovereign and omnicompetent citizen."

Lippman's observation still rings true today. Does the public really want a daily digest of political information? An omnious trend toward political dysfunction is that the number who vote in national elections continues to slide below fifty percent of the eligible voting-age population. One possible reason for this trend is that many people believe that political representatives have little to offer in terms of solving the immediate daily concerns of employment, health care, education, housing, transportation, drugs, crime, social decay, injustice, and so on. Maybe, if the right tools were available, people would have a better chance to communicate with representatives, know and protect their own rights, engage in deliberation, test hypotheses, discover knowledge, discuss theory, and better understand world events.

Obviously, merit exists in the public becoming more politically astute and "awakening from the dormant state." Success may depend partially on whether participation can be achieved in such a way as to impinge minimally upon the matters of private life. This "awakening" is the challenge for a politics of knowledge. Advanced information systems at least may put the right tools on the table.

It will happen this way: Imagine a hot afternoon at a future Fourth of July picnic, when you are telling your friends about the details of a new Pelican Brief theory, debating the merits of admitting Cuba as the fifty-first state, or discussing the ramifications of Charles Barkley running for U.S. President . . . nah, please pass the potato salad!