A SOCIAL NETWORK FOR SOLVING COMPLEX PROBLEMS

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The complexity of our world has surpassed our abilities to understand it. As a consequence, we base our opinions and decisions on oversimplifications and myths. The gap between reality and our opinions and decisions is growing very fast. As a consequence, we are falling into increasing disorder and confusion.

Congress is in gridlock. Demonstrations showing the frustrations of the demonstrators are breaking out all over the world. And everywhere it seems people are overthrowing or trying to overthrow their governments. But no one seems able to solve the problems that are frustrating them.

Oversimplifications and simple myths are not solving our problems today. They are only leading to arguments, frustration, and sometimes violence. Our political battles are based on opinions that are devoid of facts or reasoning.

'Truth' is what others believe. It is simpler to make it up provided you can convince others to believe it than to do the analysis of the facts and do the reasoning to see whether it really is true. People get away with saying whatever they would like to be true without contradiction.

This hypothesis goes a long ways toward understanding why our Congress is in gridlock, why people believe that man-made climate change is too inconvenient to believe, and why we have the Tea Party and Occupy Wall Street movements.

What can we do about it?

People are fairly good at collecting the dots that define problems. But they are abysmal at doing the logic to connect the dots to understand what they mean. Can we use a computer program to help us collaborate to bring together the best minds to define the problem and then have a computer program do the logic for us to connect them for us? Yes!

But everyone tends to think that anyone's opinion is as good as anyone else's opinion. When they see conclusions developed using facts and logical thinking, they are likely to dismiss it as no better than anyone else's opinion. They even consider scientifically drawn conclusions as just opinions of an overeducated, arrogant group who have their own rules, not ours, to draw their conclusions. If we have the opinion that climate change is not man-mode, we don't need to worry about doing anything about it. That makes life simpler.

It's much easier to state one's opinion than to check the facts and do the reasoning to relate it to what is most likely to be the truth.

What can we do about this? I have a suggestion.

I am an emeritus professor of computer science who has a career of over 50 years in both industry and academia with a common thread of developing unique problem solving methods. One of my methods, the Design Structure Method, (dsmweb.com) resulted in my invitation to MIT as a visiting scholar. It is now the subject of International Annual Design Structure Method conferences; 12 so far,

the next to be held in Kyoto Japan next September. The DSM method uses a matrix to show each member of a team which tasks depend upon which other tasks and which tasks depend upon assumptions. Each member of the team can see who else's tasks he depends on and what tasks he is responsible for that other people require.

It is common, particularly in engineering, to find that the dependency of tasks on each other form a circuit. This means that the circuit must be broken by the use of some assumptions. As the project proceeds, one can see as of that time which assumptions have been resolved and which assumptions are still outstanding. Outstanding assumptions produce risks. So the DSM can be used to indicate at each point in the project what assumptions are still unresolved and thus what the remaining risk is. The DSM can be used for members of the team to keep track of each other's work and see where others need help and how they can be helped. This allows for a flat organization that has a minimum dependence on management.

More recently, I have been developing a problem solving technique based on logic. Given a situation and a behavior that can arise from that situation, the Explainer can do the logic to connect the dots to find explanations for that behavior. The situation is described by a collection of cause-and-effect statements. The behavior is stated as a set of effects. The explanation is in the form of the behavior as a function of assumptions and facts. The intermediate effects are eliminated by the process of substitution, much as one would solve systems of simultaneous linear algebraic equations.

A unique feature of the Explainer is the ability to handle circuits in the cause-and-effect relations. Circuits can be quite important to understanding some problems. I know of no other technique available today that can handle circuits. Resolving circuits can also be useful for doing Bayesian analysis.

I assume that without the help of a computer, people can only handle about five interrelated considerations and one or two levels of logic at most. When I used the Explainer to find the cause of the economic crisis and widening wealth gap, it required over 30 interrelated considerations and nearly 20 levels of logic. This is well beyond the capabilities of people unaided by a computer program. It is no wonder then that we are living in a world frustrated by many unsolved social problems.

Most of the discussions about problems today involve more myths and emotions than facts and logic. People assume that anyone's opinion is just as good as a conclusion that reflects facts and logical reasoning. As our social problems are becoming more complex while our abilities to solve complex problems have not improved commensurately, we are being governed more by myths and emotions than by any attempt at reasoning.

In addition to its use within organizations to solve their problems, the Explainer could also be used as a social network where people could discuss the problems of the day and get the help of the Explainer program to do the logic that would allow them to understand the problems and how they might be solved.

I currently have a preliminary version of the Explainer program running that is sufficient to demonstrate what this method can do. I have developed the algorithm for replacing blocks of circuits with the equivalent cause-and-effect statements that do not contain circuits that makes it possible to eliminate intermediate effects between the behavior and the assumptions that would explain it.

However, as of now I have not yet completed programming the algorithm to handle circuits. But in the meanwhile, I have been able to supplement the existing program with some hand manipulations to solve problems that contain cause-and-effect circuits.

You can read my paper on the Explainer at http://problematics.com/readings.asp and select 'Using Cause-and-Effect Knowledge to Solve Complex Problems'. The idea is a bit revolutionary. So I have had a better logician than I look at it. He gave it a clean bill of health.

By putting the explainer into the cloud, it could be used as a social network for people to discuss the current problems of the day. A fee could be charged for the time that people use the explainer in their discussions. Money can also be made through the sale of cause-and-effect knowledge bases to others who could use them, and perhaps modify them, to solve their own problems.

I would like to start a discussion about how the Explainer might be extended and used. And if anyone were interested in helping me to finish the programming so it will handle circuits, and then make it available as a social network in the cloud, I would be most grateful.

Thank you.