

Strategic Assumption Surfacing and Testing (SAST)

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Origins

In 1978, Mitroff had a year's appointment as a Visiting Professor at the Wharton School of Business at the University of Pennsylvania. He undertook it so that he could work closely with and learn from Russ Ackoff and his colleagues¹.

During his time at Wharton, Mitroff was part of an important consulting project with a Philadelphia-based pharmaceutical company. As part of the project, Mitroff worked closely with Jim Emshoff, the Director of one of Wharton's research centers. Emshoff had in fact initiated the project.

The problem facing the company was as follows. It manufactured an important painkiller, which was available only by means of a doctor's prescription at the time. In some states, upon going to his or her local pharmacy, the pharmacist was mandated by law to inform the patient that a much cheaper generic drug was available that would do as good a job in relieving pain as the brand name prescription. While a cheaper generic drug was obviously highly beneficial to patients, it spelled financial disaster for the pharmaceutical company. Indeed, the drug was the financial mainstay of the company. Thus, if sales of the brand name drug dropped, the company had no other products to fall back on which to pick up the slack.

The President of the company appreciated that more minds than his alone were essential in making an important decision that affected the entire organization, so he involved his senior executives in deciding how to respond to a major threat to the company's profitability, if not its very existence. As a result, he asked the company's twelve senior-most executives for their advice.

This is precisely where things got interesting. Completely on their own, the twelve executives split themselves into three independent groups, each of which had a totally different perception of the problem, and as a result, a completely different response to it.

One group wanted to "out generic the generics," a knee-jerk response to the situation. It is not feasible to respond to a major financial threat by lowering the price of one's drug to meet the threat of lower cost generic drugs.

¹ Ackoff was one of the first PhD students of C. West Churchman from whom Mitroff studied the Philosophy of Science at U.C. Berkeley. Ackoff and Churchman remained lifelong friends and collaborators.

Another group wanted to raise the price of the drug. The reasoning was that this would send a strong signal to consumers that the company had great confidence in the fact that their drug was better than generics such that the company could charge a premium for it. This strategy hinged on “reverse consumer psychology.” Supposedly, the higher the price of a product, then the more confidence consumers had in it.

Finally, the last group wanted to set a price that was mid-way between the group that wanted to raise the price of the drug and those that wanted to lower it. As innocuous sounding as this last group’s proposal was, it had a very important consequence. If it was adopted, this group recommended getting rid of the Research and Development (R&D) arm of the company, because R&D is the costliest aspect of running a drug company. Its elimination meant that the company would become even more profitable if the policy succeeded, or at least it would in the short run, as there was no guarantee that the company would not need new products in the future.

Emshoff and Mitroff entered the scene because given that each group was of equal power, none of them could force their strategy over the strong objections of the others. In the end, they had to select a strategy with which they all agreed. And help them surface and understand the underlying assumptions that were in the way. Each group examines major stakeholder affected by policy, surface assumptions made about stakeholder that support policy, then debate, examine, what data to support or deny assumptions, what data do you need, revise policy based on confirmation.

Preventing agreement was the fact that all of the groups had gotten themselves into an impossible situation. They had learned all-too-well the tools they had been taught in business schools and on the job. In order to test the validity of a hypothesis or idea, they needed to collect “hard data” that would confirm or disconfirm the truth of their hypotheses or ideas. As a result, they diligently did what they had been taught. They collected reams of data. However, this supposedly sound strategy failed miserably. Collecting data only made things worse. In fact, the more data they collected, the worse off they became.

Ever since the great German philosopher Immanuel Kant, it’s well known that one can’t collect data without presupposing some theory as to the nature of the phenomenon one is studying. Otherwise, one just wanders around collecting everything and ultimately nothing. In other words, data is not theory and value free.

Unbeknownst to them, each group’s proposal functioned as a hidden, behind-the-scenes theory that directed its proponents to collect the kind of data that insidiously supported its proposal and its alone! One cannot emphasize enough that different theories direct one to collect different kinds of data. In this sense, data do not automatically test theories. Indeed, more often than not, they support them via a circuitous route.

The kinds of problems with which the executives were repeatedly presented in school and thus learned to solve were in reality nothing more than fancy exercises. They were problems in name only. They were so overly structured that there was one and only one kind of data that would lead to the one and only one “right solution.”

As a result, they were not prepared in the slightest for dealing with complex, messy problems they faced. It had nothing to do with how smart they were. Instead, it had everything to do with their mis-education.

Based on their different underlying, largely taken-for-granted theories about consumers, markets, etc., each group viewed the situation completely differently. As a result, each of them bought into an entirely different proposal. In effect, each group was making completely different fundamental assumptions about the nature of the original situation and hence the problem. They had to make a great many assumptions because there were just too many unknowns and uncertainties about the situation.

The question then became, *“How can one get at the underlying assumptions that the groups were making?”* One can’t just walk up to a person or a group and ask, “Would you please tell me in a comprehensive, orderly, and systematic way all of the key assumptions you’ve been making about an important issue?” If they could, then more than likely, they wouldn’t need outside consultants to help them with complex, messy problems. Besides, most of the time, many, if not most, of our assumptions are unconscious. We don’t know that we’re making any assumptions, let alone critical ones.

The breakthrough occurred when Emshoff realized that ***assumptions are the presumed properties of stakeholders***. For example, properties such as; what they are like, their values, power, resources, access to special sources of information, ability to influence others, and so on. It was absolutely necessary for each group to make assumptions because by definition, perfect certainty is not a prime feature of complex, messy situations. If anything, these types of problems or situations are marked by enormous amounts of uncertainty. Furthermore, because of their complexity, data collected is rarely comprehensive or exhaustive, and is likely full of holes and/or contradictions.

In order to break the logjam in which the groups were stuck, working separately, Emshoff and Mitroff had each of the groups list the stakeholders that affected the success of their favored strategies. As is well known by now—but it generally was not at the time---stakeholders are all of the parties that affect and are affected by a particular group’s behavior, decisions, policies, or strategies.

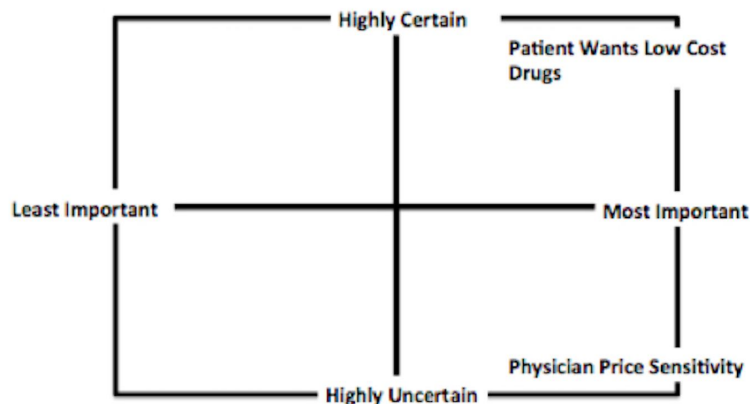
It comes as no great surprise that all of the groups had the patient as a prime stakeholder. In essence, all of them assumed that a patient wanted low cost, high quality drugs. The major differences between them regarding stakeholders were found in what they assumed about physicians.

Physicians were obviously key stakeholders - because the physician prescribes the company’s painkiller. The group that wanted to raise the price of the drug assumed implicitly that “physicians were ‘price-insensitive’.” Their policy assumed that if a physician believed that a particular drug or treatment was effective or necessary in order to help a patient, then he or she would prescribe the drug or treatment relatively independently of cost, or at least they would in the days before medicine became as cost conscious as it is today and health costs spiraled wildly out of control.

In contrast, the group that wanted to lower the cost of the drug assumed implicitly that “physicians were price sensitive,” or at the very least, they were becoming increasingly price sensitive because of the rising costs of healthcare.

What's interesting is that none of the groups had conclusive data to support their most critical assumptions. Indeed, they had very little data and had not realized that they needed to collect such data before.

Emshoff and Mitroff had the groups plot their most critical assumptions on two special dimensions: Importance and Certainty to help groups more deeply examine their positions. The horizontal axis shown in Figure 1 ranged from those assumptions on the extreme left that were characterized as not as important to the success of a policy, to those on the extreme right that were characterized as absolutely critical to the success of the entire policy. The vertical axis ranged from those assumptions at the top about which were deemed absolutely certain that they were either absolutely true or false. Thus, if one was certain that a particular assumption was absolutely true, then one believed that it was a fundamental characteristic or property of a particular stakeholder. Conversely, if a stakeholder assumption was placed at the bottom of the vertical axis, then it was felt that it was as likely to be true as it was to be false. In other words, a situation of maximal uncertainty existed.



To take a simple example, if one was absolutely certain that it would or wouldn't rain on a particular day, then one would plot the assumption of rain or not rain at the very top of the Certainty axis. Conversely, if it were as likely to rain as not to rain--the odds were 50-50--then one would plot the assumption at the very bottom of the Uncertainty axis. In other words, maximal uncertainty was the case of 50-50.

Notice very carefully that it's the *assumptions* about stakeholders that are being plotted and not the stakeholders, events, or situations themselves. Thus, in the case of rain, it is the assumptions of meteorologists regarding the chances of rain that would be plotted.

We cannot overstate the importance of this particular aspect of SAST. Very rarely do people have the opportunity to examine their key assumptions systematically (methodically) and systemically (comprehensively as a system). They almost never have the ability or opportunity to see a map of their assumptions, in effect, a map of their fundamental beliefs about an important issue or problem. Such maps allow one to go beyond seeing assumptions individually and in isolation, and allow one to see the potential interactions between sets of assumptions.

At this point, it's not surprising to learn that of all the assumptions, those pertaining to physicians were the most important and the most uncertain. Were all physicians price insensitive versus price sensitive, and in every region of the country? No one knew because they had never collected the kinds of data that would inform them about this vital aspect of an important stakeholder.

As a direct result of the process, the pharmaceutical company finally knew what it hadn't known before but that it needed to know before it could make a crucial decision. Thus, if it wanted to do it, the company was equipped to gather new kinds of data.

As a result of the SAST process they had a much better understanding of the situation, but the company executives were still strongly attached to their initial proposals. Nonetheless, it helped break the impasse when they agreed with something that one of the executives proposed. If they carefully raised the price of the drug in certain select markets they would quickly find out whether they could raise it in other markets as well. In short, they came up with a strategy that would quickly test their critical assumptions about how consumers would react to the pricing of the drug. That is, if they lowered the price, they would never find out if they could have raised it.

A More Detailed View

SAST has since been useful in a wide variety of important settings such as Corporations, Government offices, and numerous public health agencies.

To reiterate, SAST was developed to reveal the critical assumptions that underlie strategic plans and policies to create explicit visual maps for exploring them. To achieve this, SAST incorporates the following key principles.

Adversarial. SAST is based on the underlying premise—i.e., critical assumption--that the best way to test an assumption is by making the greatest case one can for the strongest possible opposing assumptions one can envision.

Participative. SAST is also based on the premise that the knowledge and resources necessary to solve and implement the solution to a complex problem are distributed among a group of individuals. In other words, no single individual no matter how well placed he or she is in an organization has all the relevant knowledge or even power to address a problem or issue adequately.

Integrative. Further, SAST is based on the premise that a unified set of assumptions and action plans are needed to guide decision-makers and that what comes out of the adversarial and participative elements of the process can be integrated.

Supportive. SAST incorporates the premise that the ability to expose and examine assumptions deepens insight into an organization, its policies, planning processes, and strategic thinking.

The detailed steps of SAST include: group formation; assumption surfacing and rating; debate within groups; further debate; and final synthesis.

In the Group Formation step key individuals from the major functional areas in an organization are formed into small 6 to 8 person groups. In the private sector, these include the CEO, Chief Operating

Officer, the Heads of Finance, Information Technology, Legal, Public Affairs, Security; etc. To minimize conflict, the groups should ideally consist of those individuals who get on relatively well with one another, and even think alike. To maximize differences, the groups need to differ fundamentally in their knowledge and perspectives of important issues or problems. Each group should have a different orientation, perspective, or policy option from which to approach an issue.

Assumption Surfacing and Rating is accomplished when each group meets separately, and from its own viewpoint, identifies the key assumptions that underlie an issue, especially its own approach to it. All of the assumptions generated are then listed.

1. Debate Within Groups

- The debate involves three key activities:
 - a. By means of eliminating irrelevant assumptions, each group determines which assumptions need to be accepted as strategic premises. To accomplish it, each group asks itself, “If the opposite of a particular assumption is true, does it have any significant bearing on the issue?” If the answer is “No,” then the assumption is judged “not relevant” to the group’s position. That is, neither the truth or falsity of a particular assumption is relevant. Of course, this may not only change over time, but another group may not accept it.
 - b. The group then ranks its assumptions with regard to their relative degrees of importance and certainty.
 - c. At this stage, individual data are then opened for discussion.
- Assumptions that are both important and certain become the central assumptions of a policy.
- Assumptions that are important but uncertain require careful monitoring and research since they are key as well.
- Assumptions in the other two quadrants may be dropped, but if resources and time allow, they may be monitored too.
- Using an Importance/Certainty graph, each group debates which assumptions are pivotal, i.e., absolutely central to its position, and it prioritizes them.

2. Further Debate Activities

The groups are brought together and a spokesperson for each group presents their Importance/Certainty graph and concentrates on those assumptions that are central to their policy (important and certain and important and uncertain). In order not to bog down the presentations, only clarifying questions are permitted at this stage. When all of the groups have presented, all the assumptions are combined in a single slide and thrown open for evaluation, debate, and discussion.

The assumptions that are central to, in the sense that they cut across, all of the groups are the basis for debate. The most contentious assumptions are the special objects of debate.

3. Final Synthesis

Ideally, the debate leads to a set of modified assumptions or a new set of agreed upon assumptions. Based on these, a Planning Book is produced. If agreement on an assumption is not reached, it warrants further investigation. Where the data are inadequate, activities are undertaken to acquire specific data necessary to resolve a strategic issue.

A Planning Book consists of:

- A prioritized list of the most critical issues;
- An assessment of the current state of knowledge with respect to the solution of the issues.
- A list of current and future activities to produce information designed to improve the state of knowledge relevant to the critical issues.
- When a policy decision must be made, the results of the information produced in accordance with SAST is collected and related to the issues for which they were undertaken. A final debate is held and judgment is made on the best set of assumptions *that are known at the present time* from which to proceed.
- An appropriate policy is chosen, based on the new information and the synthesis that has hopefully emerged.

Concluding Remarks

The authors are the first to acknowledge that SAST is a demanding process. It requires a great deal of understanding, patience, and commitment of time by those individuals and organizations who desire to use it. Nonetheless, we also know from experience that the more that it's used, the easier, faster, and more efficient it becomes. For this reason, we are not primarily concerned with whether everyone follows all of the steps exactly as we have listed them.

In this context, it is important to note that when Barabba was at Kodak and there were not enough resources available to form four separate teams to debate a significant issue, an employee who had participated in a previous SAST came up with the idea of his role-playing four separate positions. He thus took turns acting as four separate groups. In effect, he assumed the role of a rotating proponent for each of four separate positions.

What counts in the end is not following lockstep the detailed steps of a process, but in constantly innovating how it's to be used.

Our primary concern is the clear understanding that *assumptions are the presumed properties of stakeholders*. Before people and organizations make crucial decisions, they need to surface and debate as best they can the most critical assumptions upon which all key decisions depend.

Ideally, every organization should have a map of its most critical assumptions. It needs to monitor, critique, and update these assumptions on a regular basis as conditions change and new information is obtained. In this sense, SAST, or a variation of it, needs to be a cornerstone of the strategic planning and thinking of every organization, big and small, public and private, for-profit and not-for-profit. It's so key that we regard it as one of the essential cornerstones of a Learning Organization.

Postscript: The Internal Assassin Team

A year or so after the Tylenol poisonings, in the hopes of learning more about product tampering, Mitroff visited McNeil Pharmaceuticals once again. Straightaway, Mitroff asked the person who agreed to talk to him what they were doing to combat product tampering, the particular crisis that always haunts the pharmaceutical industry. Without losing a beat, he said, “We formed an Internal Assassin Team.” To which Mitroff immediately blurted out, “You did what?” Talk about an action that challenged one’s basic assumptions about an organization!

He continued, “Yeah, early on we decided we knew more about our products than anyone else, so we asked ourselves the uncomfortable questions, ‘How could we attack them in the worst possible ways?’ So one day we held up a bottle of one of our painkillers and we looked at the cap as the front door of a house and the sides of the bottle as the walls. We then asked ourselves, ‘How could a burglar get in, do the most damage, and remained undetected for as long as possible?’”

“We quickly learned that there was no way to keep a determined burglar out of the house so-to-speak so that the notion of tamper-proof bottles was completely out of the question. Nonetheless, it helped us to come up with the idea of tamper-evident seals so that if a bottle was tampered with, as it was in the case of the Tylenol poisonings, consumers would be automatically alerted not to take the pills.”

In an important turn, a Japanese company was selected to make the tamper-evident seals since they were the best equipped to manufacture them. Thus, the “solution” to one type of crisis involved another, i.e., international trade.

Would that more organizations would think like the drug company and form an Internal Assassin Team to protect them and us. Even more, would that all organizations would continually surface and challenge their key assumptions.

References

1. Barabba V, Mitroff I. Business Strategies for a Messy World: Tools for Systemic Problem-Solving. Springer; 2013.
2. Barabba VP, Mitroff II. Assumptions—Strategic Assumption Surfacing and Testing (SAST). In: Barabba VP, Mitroff II, editors. Business Strategies for a Messy World: Tools for Systemic Problem-Solving. New York: Palgrave Macmillan US; 2014. pp. 22–34.
3. Gregory A. Systems Methodologies for Effective Strategic Decision-Making. ISSS. 2007.
4. Mitroff II, Emshoff JR. On Strategic Assumption-Making: A Dialectical Approach to Policy and Planning. AMRO. 1979;4: 1–12.
5. Mitroff I, Mason R. Creating a Dialectical Social Science: Concepts, Methods, and Models. Springer Netherlands; 1981.
6. Mason RO, Mitroff II. Challenging Strategic Planning Assumptions: Theory, Cases, and Techniques. Wiley; 1981.
7. Petrović SP. A Dialectical Synthesis In Holistic Business Strategy Formulation. *Economica*. 2011; 493.