

## **Seminar Series Session 04 - Meeting Minutes**

**Title:** Dissecting Structured Analytic Techniques (SAT): Strengths, Weaknesses and Limitations

**Moderator:** Capt Sebastian Rinelli

**Guests:** Dr Markus Bresinsky, Ole Donner

**Audience:** Open to the public. Practitioners, academics, and advanced students.

**Date:** 20 Jan 21, 15:00 UTC+1

**Duration:** 90 min - 120 min

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### **Content:**

- Benefits and value of SAT
- Design, implementation and teaching
- Limitations, weaknesses, and mitigation strategies

### **What purpose do SATs serve and what is the added value?**

Bresinsky:

- it is a technique, it gives a rough guidance -> first entry point into more professional analysis
- can also serve as a "cookbook" -> if you are stuck in the analysis, it gives you a direction within the process
- it provides you with a good idea of what kind of drawbacks and phenomena you might face and helps you to avoid those

Donner:

- mainly used to avoid cognitive pitfalls: biases, heuristics, intuitive traps
- intended to increase the accuracy of analysis
- make analysis more transparent and comprehensible
- enable and require that analysis is collaborative -> SATs can enable collaborative process

### **In what contexts is the use of SATs particularly beneficial?**

Bresinsky:

- especially in heterogeneous teams e.g. different competence and skill levels -> they can provide a common denominator/codebook that everyone can follow and thus develop acceptance of the process
- However, that might also be a disadvantage because it already paves the way for analysis which might hinder flexible, adaptive analysis
- also helpful in inter-organizational context -> having SATs helps others to understand how you came to the conclusions or products

Donner:

- this is not only the case between organizations but also between branches within an organization -> facilitate collaboration on different levels
- after a certain time, teams think alike to a certain degree, work in the same way -> SAT help to avoid groupthink
- common framework of SAT helps to work together much more effectively

**There is an ever-increasing amount of SATs out there. Based on your experience, which SATs would you recommend?**

Donner:

- if I had to pick only one -> analytical spectrum (currently not treated as SAT but it is an enormously powerful thinking tool)
- it covers most analytical questions you can ask and types of analysis you can perform -> four steps
- provides for orientation -> "what is my task and what is not my task?"
  - e.g. my customer asked a descriptive question, but he will not be capable of understanding the whole range of dynamics at play if I do not also answer the question of "why"

Bresinsky:

- scenario thinking is my preferred technique -> but you maybe need to apply a few more techniques beforehand
- it can be used in daily business and as a daily exercise
- it is important because we have difficulties foreseeing the future
- scenario development gives you a good idea that thinking in possibilities is not thinking in probabilities
- it is the most important interface concerning the decision-making processes in whatever kind of organization
- I always recommend: you need to deny giving probabilities when asked "what is going to happen?"
- In April, we were contacted by a federal agency regarding the development of the pandemic and its impact on society -> I was asked to give a clear forecast of how long the German society will be in a lockdown
- this is the kind of situation where you need training in the techniques -> you need to know the strengths but also weaknesses of those techniques

**SATs are also called de-biasing techniques. Which cognitive biases have the most profound impact on analysis? Which SAT do you recommend to address those?**

Donner:

- it is hard to say which biases are the most important ones, but what Pherson does is connect specific techniques with specific biases
- from my point of view one of the most important biases: confirmation bias -> seeking evidence supporting your theory, hypotheses, arguments -> you simply try to verify your ideas
  - classic response to counter this bias is the Analysis of Competing Hypotheses (ACH)

- another important intuitive trap = not having sufficient cognitive bins
  - you usually get a very good idea of where your analysis is heading and what your preferred answer is from the beginning on
  - starting like this, you usually do not have enough cognitive bins to process information, regard information as important, consider alternative explanations
  - exploration techniques provide mental bins that allow information to be processed (a good set of hypotheses is a good start into analysis)

Bresinsky:

- Can you train analytical thinking? -> that is something implicitly assumed when talking about SAT
- analytical thinking needs cognitive predispositions (intellectual capabilities and skills)
- techniques don't guarantee to overcome biases, they are just helpful indicators that you maybe have fallen short on one of those cognitive biases
- they help analytic thinkers to avoid traps
- critical rationalism: the first thing you should always believe in is that you are wrong, from that starting you should develop a scientific explanation
- SAT provide technical mentoring to prove ourselves that we are wrong -> reversing thinking processes (schizophrenic)

**The analytical spectrum rather provides a framework for analysis than being a technique itself, right?**

Donner:

- it is not labelled as an analytic technique, but you can handle it for analysis as an intended thinking tool, the spectrum can be used to contextualize/locate your question along the spectrum and broaden your focus
- e.g. the spectrum can be used as a starter technique to start into the analytic process asking the right questions
- Reading recommendation (German language): <https://strukturierte-analyse.de/essays/donner-das-analytische-spektrum-multitool-fuer-das-organisieren-von-fragestellungen/>

**Would you say that the current design of the intel cycle is reflecting the spectrum? Is it easy to introduce this thinking into how information is processed at the moment according to the intel cycle?**

Donner:

- no, it is not easy actually. In AIntP-18, they were not capable of integrating SAT in the process = one of the biggest weaknesses of this paper
- this shows the challenge of integrating SAT in the process, but if you think of SAT as tool analysis in a toolbox, you can use it very flexibly whenever it fits
- Use of SAT depends mainly on the character of the questions you are trying to answer -> using this as a starting point, it should not be too difficult to combine doctrine with the SAT approach

Bresinsky:

- the question is whether concepts like intel cycle reflect reality, whether analysis really strictly follows those sequences
- it is definitely true that with ongoing analysis/process of informing decision-makers etc. you change the expectation and insight of decision-makers but also the operational environment -> you always need to step back at some point and this leads to confusion
- For example: you give students a task, they disappear and then they provide you with results -> you come up with a new task that requires them to go multiple steps back
- SATs and workflows give an order to the analytical process, but we shouldn't expect that it is going to happen in reality
- you need experienced analysts giving guidance to a team -> the leaders need to make a meta-analysis of the analytical process to give orientation to those within the process = meta controlling of the analytical process

### **Do we need to be prepared to move up and down in the spectrum?**

Donner:

- For example: if a decision-maker asks you to create scenarios, this might require you to start at another step in the analytical spectrum (depending on what has been done so far) to create an evidence base
- next step: identify drivers -> these are the foundation for scenario generation
- you need to use all the other techniques as well to create scenarios as a base, otherwise, it is not foresight but speculation

Bresinsky:

- the current pandemic is a nightmare for analysts
- analysts come around the corner saying what they expect but then decision-makers say: no we are not doing it because the public does not accept it -> analysts have to immediately restart their analysis
- sometimes we think of analysis happening in rather isolated contexts, but it is an illusion to believe that analysis happens behind closed doors
- we as analysts should not believe that whatever we do has no connection to the developments in the real world -> we already interfere just by conducting analysis

### **To what extent are SATs capable of dealing with new information?**

Bresinsky:

- people hate nothing more than revising assumptions -> we have mental models we worked hard on to develop them, and you stick to those ideas and do everything to defend them
- the analyst as a person is himself hesitating to reverse own assumptions -> SATs aim to intervene
- it is the analyst's profession to reverse assumptions
- by designing an analytical process we are already predefining the information that can be fed into the process
  - e.g. more qualitative approach fails to include quantitative data

- this issue cannot be tackled by SAT but should be addressed on the organisational level

Donner:

- certain SAT literally force you to feed them with new information (e.g. timelines, ACH -> perfect for processing and evaluating existing and new information) and thereby to revise the analysis
- not all but a lot of SAT are useful tools to continuously integrate new information in the analysis process

Bresinsky:

- when analysts work on scenarios they might show up, in the end, saying that they were not able to develop different scenarios although they applied various SATs, cross-checked everything etc.
- but what they did, in the end, is strengthening their own biases/basic assumptions by doing in-depth research -> sometimes there is the illusion that the application of SAT improves analysis
- results: people either complain about SAT or accept biased results

Donner:

- I do not think that these people might necessarily have seen their own mistake by just intuitively developing scenarios without using SAT
- SAT are just thinking tools, it is not the aim of SAT to stick to the results, in the end, you can still reject the results and start over again

**There are two camps in the literature: a set of SAT applied throughout the process of analysis vs. coupling SAT with intuitive thinking -> do you teach SAT as part of larger methodology or as stand-alone techniques?**

Bresinsky:

- I know about these two camps and I find it a bit misleading -> depending on what is the problem at hand
- SAT are really helpful to narrow it down to the most essential parts of conducting analysis
- it depends on the competence level of the target audience -> more experienced analysts might be a bit handicapped and prefer applying more intuitive thinking because they integrated SAT in their own thinking DNA
- This brings me back to the question: can you train analytical thinking? -> what are the necessary preconditions for good analytical thinking (cognitive skills)
- if we would have a clearer answer to this, we could maybe sort out these two camps

Donner:

- the question 'should we use system 1 or system 2 thinking' leads no-where
- Kahneman: everything we perceive is created by system 1 -> system 2 is a kind of "higher judge" who can reject what system 1 produced or ask for new answers (which are still created by system 1)
- what SATs do is facilitate system 2 thinking, but they are just some sort of cup, but inside the cup is still system 1 thinking

- the main point is: do not just use system 1 thinking because there is a high risk of falling victim to cognitive pitfalls

Bresinsky:

- a good analyst should necessarily master all SATs, but in the end, they are just a starter for good analysis
- what comes, in addition, is intuitive thinking, but there are different aspects of intuitivity we should keep in mind
  1. having a good feeling for analysis/blind spots etc.
  2. operationalize values, assumptions -> even gifted analysts have a problem in the way they measure and here, intuition can be very misleading

### **Can you think of other limitations?**

Bresinsky:

- the most prominent issue is “if you have a hammer, everything looks like a nail” = believe that by mastering some SAT you can deal with everything
- you need to be aware of the scope and limitations of the tools at hand -> SATs are a little bit too abstract sometimes
- (debate on correlation and causality)
- SAT will develop over time, they are not the holy grail of analysis, this should be kept in mind

### **Do you have practical examples from your student laboratory?**

Bresinsky:

- many students learn in statistics that even if you can find a correlation, there is not necessarily causality -> that shapes the thinking of analysts
- but what we actually do when connecting key drivers is assuming causality
- when people do not like your analytical products is saying that you did a wrong shortcut between correlation and causality
- we are used to thinking in causal pathways when developing mental models and we support it by data, and then dive into the correlation
- but the pure philosophy of correlation is that you cannot assume causality -> that gives you a drawback regarding the value of the analytical end product
- if you don't have an idea of what is possible from a methodological point of view, you will miss an answer to people challenging your analysis -> these are challenges also to the SAT right now

Donner:

- check your knowledge on the difference correlation vs. causality: <https://tylervigen.com/spurious-correlations>
- regarding application errors: with regard to individual SATs, the danger increases with the complexity of the technique
- brainstorming works more or less well with every group and facilitator, whereas SWOT and ACH turns out to be very complicated for some people
- therefore, experienced facilitators are always needed as a pillar for good analysis

- there is a need for proper training, you should be capable of deciding in which cases you can use SAT and in which cases you should not use SAT
- also, you need to learn how to apply SAT correctly -> there is no magic producing truth happening in between the steps

Bresinsky:

- successfully applying SAT leads to the situation that it is repeatedly applied in a specific way and because this leads to specific results
- For example: people always look for a template when using PMESII/ASCOPE, but there is only one table on the internet on PMESII/ASCOPE and you can read through all products that this table was used as a template
- the same applies to SAT, the template is transferred to the problem -> applying the technique in a specific way without thinking about it

**Are there differences with regard to SAT on the strategic, operational, tactical level? Are some SAT more suited for e.g. strategic level or can they be applied equally on all levels?**

Donner:

- you can use SATs on each level, but it often more depends on how much time you have -> it depends on whether you are working proactively or reactively
- this range from reactive to proactive often also reflects the needs from the tactical to the operational to the strategic level, but in principle, you can use every SAT on every level because what's decisive is are the questions you are asking

Bresinsky:

- the more you get to the operational level, the more the people are interested in how you came up with the conclusion
- on a strategic level, people are not going to ask about that, they are just looking for the golden nugget of the analysis
- on a strategic level, the decision-makers need to trust analysts, and analysts should never betray decision-makers

Donner:

- if you share the results of SAT, that can lead to the point of not even being able to finish the analysis because the decision-maker only wants the good looking results, although it is a side-product in the midst of the process

**Which decision support techniques would you like to highlight and why? What could be problems in applying those?**

Donner:

- analysts try to provide information superiority to create decision superiority to reach effect superiority
- the decision-maker has the same problem as the analysts in as much as he is confronted with a huge amount of information, not only cognitive capabilities of analysts are limited, but also those of decision-makers, they can only process a limited amount of information

- you have an increasing number of possibilities/broad range of options, at the same time there are a lot of dynamics impacting your decisions, and getting impacted by
- as a decision-maker you need to be aware of those -> SAT can help to provide a framework for the decision itself
- what we want to include in the course:
  - paired comparison matrix -> comparing all the options at hand with each other
  - decision matrix -> how important is each factor
  - SWOT analysis -> gives a nice overview on what helps me to reach my objective, what hinders me reaching it -> formulate strategies
- the complexity you can deal with by using these techniques is far beyond what can be processed by human minds

### **How can the effectiveness of SATs be evaluated?**

Bresinsky:

- we are currently working on a test platform where we apply SAT with different teams on a different task to measure the effectiveness
- it is not a simple question to answer, we are far away from providing a blueprint how to conduct these kinds of measurements
- what we do are kind of field studies with teams working on same tasks in different settings -> controlled environment for experimentation
- this can give us a first direction/idea of how to better evaluate techniques

### **Is the question of effectiveness bothering you?**

Donner:

- it is a question I ask myself as well, looking at the literature you will get few results
- it is a challenge to create a comparative setting where SAT can be tested successfully

### **If the topic of SAT is new to me, what should I do to get engaged with it?**

Donner:

- you first need to understand importance -> first read Thinking fast and slow by Kahneman + Psychology of Intel Analysis by Heuer
- online course -> critical thinking fundamental course by Globalytica
- structured analytic techniques for intel analysis by Heuer & Pherson
- simply try using SATs, go to an experienced facilitator -> it is not done by simply reading the books but you need to apply them
- there is a difference in what is written and how it is performed in real life
- practice, practice, practice

Bresinsky:

- try to get close to literature and data that is addressing the issues from a first-handperspective -> this triggers ideas and thoughts
- many people only use conclusions based on conclusions from others based on conclusions ...
- no technique will help you out if you have no idea what you are talking about

- you should not only consume books/movies but also discuss the things you have seen