



S I T
Systematic Inventive Thinking



The More the Better?

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SIT – Systematic Inventive Thinking

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Introduction

If we were about to launch a new product on the market and had bought advertising space in the most popular magazine in the country, what would we expect to find in the ad?

- A large visual of our product
- A long list of its features and benefits
- A catchy slogan
- Price
- And more...

Now, if we were to ask ourselves what a Martial Artist should develop as part of his or her training, the answers would generally include:

- Muscles
- Endurance
- Speed
- and more...

Similarly, if we asked what should a reliable and solid Bible commentary include, we would expect the following:

- A background of what we are reading
- Detailed explanations of the text
- Questions to shed light on generally overlooked areas
- and more...

Furthermore, if we manufactured cellular phones and asked what the next generation of phones should include, the typical answers would be:

- More functions for the same or lower price
- New technologies
- and more...

But what would happen if we were to follow “the road less traveled by” and apply a “subtraction” operator instead of the intuitive “addition (more)” course of action?



Systematic Inventive Thinking

During the 1940's, a Russian chemical engineer named Genrich Altshuller postulated that there must be identifiable, repeated patterns or formulas underlying successful creative solutions and patents. By reverse engineering more than 200,000 patents and technological solutions, he succeeded in defining approximately 40 patterns or templates that he labeled "standards". These templates consisted of system dynamics that could be determined solely by the intrinsic features of the products. He called his theory ARIZ – Algorithm of Inventive Solutions.

The idea that creative solutions can be drawn from generic patterns isolated from outside influences may at first seem illogical. SIT – Systematic Inventive Thinking – is conceptually consistent with Altshuller's attempt to uncover underlying logical patterns in the creative solutions of technological problems. However, instead of limiting this pattern-based theory to technological solutions as ARIZ had, SIT has expanded it to applications in product development (see below) and advertising. Furthermore, SIT has condensed the number of patterns from 40 templates to 5 operators. Remaining with a manageable number, SIT has proven to be a user-friendly methodology that is able to produce real, practical results (adapted from Goldenberg & Mazursky).

Let's illustrate one of these operators – subtraction. The subtraction principle suggests that instead of adding features to a product to create a new one; adding resources to a problem situation in order to solve it; or increasing the amount of information in an advertisement, we are to remove one or more of the essential components.

Consider the billboard below:

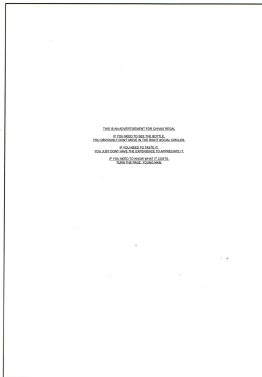


Most advertisers prefer to use typically the largest available surface area for advertising. A wall of a building is prime media territory as it can contain a huge amount of information including gigantic visuals, long lists of product features, etc. This ad, from the USA, shows that subtraction of media



space can, perhaps surprisingly, increase the exposure and impact and deliver the message more clearly than a plethora of words.

But this “trick” isn’t unique to the United States. The famous Chivas Regal advertising campaign from Singapore is a prime example of subtraction in advertising. This is just one of the campaign’s ads:



Ad Agency: The Ball Partnership, Singapore.
The text reads:

THIS IS AN ADVERTISEMENT FOR CHIVAS REGAL.

IF YOU NEED TO SEE THE BOTTLE,

YOU OBVIOUSLY DON'T MOVE IN THE RIGHT SOCIAL CIRCLES.

IF YOU NEED TO TASTE IT,

YOU JUST DON'T HAVE THE EXPERIENCE TO APPRECIATE IT.

IF YOU NEED TO KNOW WHAT IT COSTS,

TURN THE PAGE, YOUNG MAN.

Here, the subtraction operator is the main tool for creating the entire brand character. Fostering a sense of elitism in the target market, Niel French, the campaign’s copywriter, was able to make Chivas Regal the best selling whiskey in Singapore. Next time you notice a creative ad, try think to yourself whether it stood out because something was conspicuously missing.



Rabbi Shlomo Yitzchaki (Rashi)

Speaking of items that are conspicuously missing, it is rare in all of Rashi's Bible commentary to find a single question asked.

Rashi was the outstanding Biblical commentator of the Middle Ages. He was born in Troyes, France and lived from the year 1040 to 1105. Even today, Jews the world over do not attempt to understand the biblical text without reading Rashi's commentary in parallel.

The commentary, it is supposed, evolved as follows: students would question Rashi about the text or he, himself, would rhetorically ask questions about specific words, and a student would write the short, lucid answers in the margins of the parchment. Thus, centuries later, we now have the answers, but the questions need to be discovered.

As put by Rabbi Avigdor Boncheck, the author of the book "What's Bothering Rashi":

First and foremost, Rashi's commentary is built on a "question and answer" principle. The commentary is meant to answer questions that arise from the text. While this may be true for all commentary, Rashi's presents us with a particular problem. He never - or hardly ever - tells us what his question is! To paraphrase a literary critic from another context we would say: "Every Rashi comment is an answer to a question. What is his question? That is the question!" Discovering the implicit question behind Rashi's comment is what the study of Rashi is all about. Finding out "What is bothering Rashi" is the stuff of Rashi-interpretation.

Once again, subtraction can be readily seen – this time as the signature of a biblical commentary. Of the two most essential components of an analysis – the question and the answer – one has been omitted.

Let us demonstrate how we use Rashi's commentary to study a short paragraph, as taught by Rabbi Boncheck:

Genesis 6:9

"...Noah was a righteous man he was righteous in his generations; Noah walked with God. "

Rashi:

*"**In his generations:** Some of our Sages interpret favorably: How much more so if he had lived in a generation of righteous people, he would have been even more righteous. Others interpret it derogatorily: In comparison with his*



generation he was righteous, but if he had been in Abraham's generation, he would not have been considered of any importance."

What is bothering Rashi? What is unclear, problematic or redundant in the sentence that prompts Rashi's comment?

Certainly the words "in his generations" are redundant. Noah was righteous in his generation! When else would or could he be righteous, if not in his own generation, when he lived?

Thus, Rashi's first concern: Why the need for this word?

But this word is problematic in another sense. Look at it.

It is in plural! Does a man live in more than one generation?

This then is the second problem Rashi addresses.

So, because the word seems redundant, he focuses on the phrase, which can mean either:

1. "even in his generation"- he was righteous in spite of the corruption of his generation. Or
2. "only in his generation" – he was righteous only relative to the corruption of his generation.

So the phrase "in his generation" is not redundant after all, whichever opinion you choose.

But why the plural?

The first opinion, "even", claims that Noah was righteous not only in his generation. That is, he would have been considered righteous even in other generations. This then would be the reason for the plural.

But the second opinion, "only", doesn't answer the plural form, so why bring it? Let's look at the second part of Rashi's commentary. Why does he refer to the "generation of Abraham"? Some answer that the next righteous man after Noah was Abraham. He came after Noah's generations. So the comparison was made with him and we should look at the differences between Noah and Abraham. I would say that the meaning is this: Noah was Righteous in a particular sense, he was Perfect with G-d. He wasn't a very social fellow, he had little to do with his peers. He wasn't particularly righteous with his fellowman. He didn't try to teach them to improve their ways, as Abraham did. Abraham put himself out for his contemporaries even though they were not righteous individuals. Only by comparing Noah to Abraham can we see what he was lacking in his righteousness. He was lacking the basic element of true righteousness: "Love thy neighbor as thyself." Had he been in Abraham's generation, "he wouldn't have been considered of any importance" because Abraham's love for mankind would have overshadowed Noah's insular-type righteousness.

This is how we study the Bible with Rashi. We take his comments and try to understand what was bothering him – what questions was he answering. Each observation sets us on an exciting trip fueled by our need to "question the answers". The result is a robust commentary that can be deeply analyzed by adults, but simple enough for school-aged children to understand, allowing them their first glimpse into the ABCs of a religion.



Tai Chi Chuan

Tai Chi, too, allows us to internalize the fundamentals of a lifestyle in a manner that can be practiced by anyone independent of age or skill level.

“Tai Chi” consists of two Chinese symbols. “Tai” means “the most, the ultimate, the total” and “Chi” refers to “poles, extremes”. The symbol, therefore, denotes “the total extremes, or the ultimate poles”. It implies a sense of perfection or ideal action.



The Tai Chi symbol consists of two portions: the black one, called “Yin”, represents the “passive” in nature; the white one, called “Yang”, stands for the active. The Yin and Yang signify two contrasting actions that are in conflict. Some of these pairs are: day-night, active-passive, masculine-feminine, fire-water, external-internal, etc. Thus, the idea behind the symbol is that we can reach perfection by achieving the correct balance of blending opposite forces.

The third character is “Chuan”: meaning fist or martial art. So Tai Chi Chuan is a martial art that is based on the idea of optimally combining opposing forces.

As a martial art, it looks out of place. The (slow) speed along with the lack of attention to strength and muscle development remind us of a kind of “slow motion” of the expected activity.

But, actually, this is the secret of the art. By moving slowly, Tai Chi practitioners achieve accuracy and internalize the postures. By not relying on their strength, they have no choice but to learn how to use the existing forces around them – in this case, their opponents’. By avoiding the use of muscles, they emphasize center-of-gravity and synchronized body motion.

Tai Chi eliminated muscles, strength, and speed. What resulted is a lifestyle that is simultaneously a branch of Chinese medicine, a martial art, and a philosophy of life and behavior.

Specifically, the “subtraction” operator can be demonstrated using the following training techniques:

- Holding the arms in a static posture (a “Tsan Tzuan” training) using minimal force while feeling as if they were floating
- Training in “push hands” avoiding the opponent’s push

Tsan Tzuan is a form of standing meditation in which a posture is held for a couple of minutes. Beginners find it very difficult to hold the posture comfortably for more than 30 seconds. As they progress, they learn how to “let go” and utilize just the muscles required for the posture. More



advanced levels even use the posture while moving. The secret here is to eliminate any non-essential muscle tension. Much like subtraction in other fields, what was formerly thought to be indispensable could have been removed long ago.

Push Hands is the basic form of sparring while training Tai Chi. It is a gentle sport of control where success is achieved by upsetting the balance of one's opponent. The use of punches and kicks is avoided until the student reaches higher levels and has assimilated the movements so that they become natural reflexes.

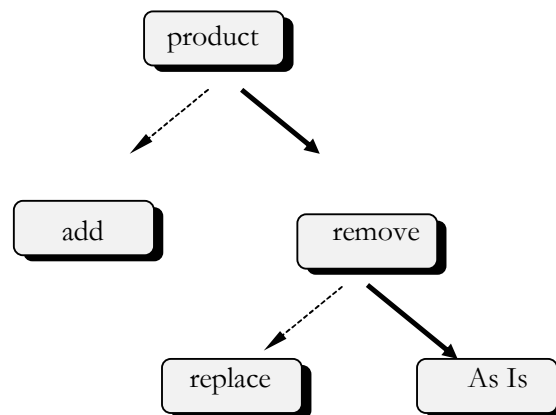
Tai Chi movements are performed slowly, evenly, and in a meditative state. Correct form is accomplished by continuous motion without break or pause. The Chinese use the metaphor of pulling silk from a cocoon: pull steadily and the strand unravels; pull too fast or too slow, and it breaks. Another metaphor commonly used is one of water descending from the top of a mountain towards a valley, adapting itself to the changing terrain.



Systematic Inventive Thinking Revisited

As mentioned, water running down a mountainside follows what physicists call the Path of Least Resistance. A similar effect occurs in human beings when exercising their cognitive muscles. As Edward DeBono writes: “Incoming information creates 'mind-cricks' that later channel future information. What happens here is that similar information always results in the *same* ideas.” Creative thinking is, then, an exercise in following your Path of *Most* Resistance. It is the ability to overcome the psychological resistance occurring when following a rarely used cognitive path that leads to creative thought.

For the subtraction operator, it can be said that the Path of Most Resistance looks something like this:



Consider for example, a cellular phone. If we would like to innovate around this product towards the goal of arriving at ideas for new cellular phone products, our natural tendency would be to *add* – a phone that is also a PDA, also a calculator, also a modem, etc. The Path of Most Resistance, therefore, would tell us to subtract. To make life, seemingly, even more difficult, we are asked to *remove* one of the essential components of the phone along with its function. When we remove the keypad, we have thrown ourselves into an unfamiliar situation – we have a cellular phone with no keypad and, therefore, no way to dial out. We immediately try to replace the keypad with something else that will allow us to dial out, but the Path of Most Resistance blocks that *replacement* route and forces us to think what such a phone – As Is – is good for. If you have teenage children, the new product may seem obvious. Parents want to be able to keep track of where their teenage children are without their adolescents running up a huge phone bill. Buying them such a phone would be a perfect solution. Now that we found a market for our idea, we need to check whether we can make a phone like this. Working in a cellular phone company, we realize that all we need to do is manufacture a regular cell phone and disable the keypad. This introduces other possibilities: retaining one working key for speed-dialing home or to the police; allowing teenagers to purchase pre-paid phone cards and dial through them; the ability to activate the keypad when the child reaches a certain age without the need to buy a new phone. Subtraction has opened up a world of



new product possibilities. When Motorola came out with this concept in Israel, called the Mango, it completely changed the face of the cellular market, proliferating the purchase of cell phones across all age groups. Its influence was so great that the Mango phone was rated by the American Marketing Association to be one of the 5 best global marketing ideas that year.

As was the case with the study of Rashi's commentary, here too a solution was uncovered only to subsequently search for the problem. When inventing a new product, the starting point was not the consumer's needs, but rather the existing product itself. By manipulating this existing product with the subtraction operator, a new product idea (solution) is generated, and subsequently a target market (a population with an unanswered need or problem) identified. This central principle of the SIT methodology is called Function Follows Form – we first invent a form and only then search for a function. As suggested by the cognitive psychologist Ronald Finke, the Function Follows Form principle states that it is easier for an individual to decide whether a certain form is beneficial to him or her than for that individual to be able to express what new form he or she would want if anything was possible.

Conclusion

It is easy to understand why society equates progress with the theme of “more is better”. Progress is the increase of experience, the multiplication of individual choices, the expansion of possibilities. But this is exactly what makes subtraction so powerful.

Cross-culturally, we identify examples of breakthroughs that could have been accomplished through an opposite operator – subtraction. Everywhere in the world, it has been shown that the unexpected removal of components from an advertisement catches the viewer's eye and can strengthen a brand image more than flooding the consumer with product information. Western, capitalist society can and does subtract in order to move forward with novel products. Chinese philosophy has become more robust by reducing. A 5,000 year-old religion can become more accessible and better understood by removing.

Wherever we look, we can see advancements through subtraction. “More” is often better, but sometimes less is more creative. Let's not overlook the progress we can achieve from “less”.

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