Embrace Constraints to Innovate

BY **ADITYA BHALLA**

Constraints are Omnipresent

Many times Problem solvers feel dejected when faced with innumerable constraints. Psychologically it may even trigger thoughts along the lines: “Why me?”

But history is replete with examples of innovators not allowing their innovative spirit to be broken by the constraints. Through their never-say-die spirit coupled with a systematic thinking framework they are eventually able to come out on top of the situation.

Consider two examples to cheer up

1) Michelangelo was a renowned sculpture who hated to paint but was forced by his *boss* Pope Julius II to paint the Sistine Chapel despite the presence of renowned painter Raphael in that era of Renaissance.

   Michelangelo refused the help of anyone and set about the job. In that process he came up with an innovative way of painting called *fresco* which is the art of painting on fresh moist plaster with pigments dissolved in water (refer image).

Michelangelo’s Sistine Chapel

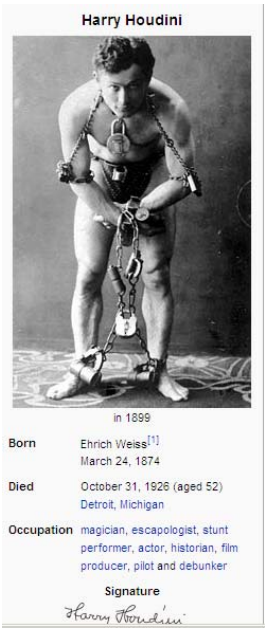
source: http://www.cs.utah.edu/~bigler/pictures/europe2002/italy/italy.html

2) Genrich Altshuller, the creator of TRIZ (Russian Acronym for *Theory of Inventive Problem Solving*) was arrested for sharing with Stalin his desire to spread the knowledge of TRIZ to fellow citizens and made to undergo many hardships.

   He did not let his inventor spirit die and used the principles of TRIZ to maximize the latent positive opportunity in each stressful situation.

   One example being his choice of solitary confinement over manual hard work in harsh conditions since he felt he would not be able to physically survive the harsh winter conditions and then befriending the criminals in solitary confinement by narrating stories.[1]

Performing the Houdini Act



How are innovators able to perform the Houdini Act and come out stronger from a situation full of constraints? There are many skills at work behind this magical performance. One of them is their ability to spot latent, derived or wasted resources and use them to achieve their objectives.

Let us consider a situation and demonstrate this skill. We show this as a dialogue between an innovative mind (called IMind) and a student (called NoMan).

Entering Customer Data into Database

A travel company wants to improve the process of data entry of customer personal details in the customer database. Currently the staff at the branch office enters the data while talking to the customer. Management wants a solution that does not require any company staff (on rolls or contract) to be involved in the entry of the data.

[1] The Innovation Algorithm, TRIZ, systematic innovation and technical creativity by Genrich Altshuler, published by Technical Innovation Center, www.triz.org

NoMan: How can we improve the process?

IMind: First of all for repeat customers the information should be updated and not re-entered

NoMan: OK, what next?

IMind: See if you can leverage any other existing database like government citizen id, credit rating databases to avoid entering the information

NoMan: Not all countries have these provisions and regulatory conditions may prohibit sharing of information available in those databases.

IMind: Tie up with the travel company partners like airlines, hotels, transportation to have some representative to fill in the details. Design a form that captures minimum information common to all. Use their database as a base to export to your own database.

NoMan: Travel partners may not have staff for all locations and may be in similar mood to cut cost.

IMind: Minimize the fields to be entered

NoMan: Ok but how do we enter the fields that remain?

IMind: Try to eliminate the paper format of the form and get the customer to fill in the form details directly into the database. Preferably allow customers to enter online without needing to visit the branch.

NoMan: Not all customers have internet connection to fill the form online. What do we do with those who visit the branch?

IMind: If the branch has space provide two options to the customer

1) Customer enters the information through a self-help kiosk or
2) Customer enters the information directly on the machine of the branch staff

NoMan: Not everyone is comfortable or adept at using computers. It will create process delays.

IMind: Consider two alternatives

1) Get him to write on paper form, scan the form and use writing recognition software to directly enter into database
2) Get him to write on the pad and use writing recognition software to directly enter into the database

NoMan: The software may create problems with recognizing different styles of writing

IMind: Ask them to bring pre-identified printed bills of utility firms where the name and address and other details would have been printed and use that to scan and enter into database using recognition software

NoMan: They may forget to bring the bills of utility firms or the name may be of another person in their home. Additionally the software may be costly to install or maintain.

IMind: Provide the person a pressure sensitive pad with alphabets and numbers printed on it and get him to press it to enter information.

NoMan: It may be costly to implement and complex to maintain. Additionally the person may be illiterate.

IMind: Ask the person to speak into a microphone and use speech recognition software to enter

NoMan: It may be costly to implement and difficult to train software to recognize different accents

IMind: Get some volunteers from colleges (as part of their summer projects) and get them to pitch in.

NoMan: That may solve the problem for only 2 or 3 months of the year.

IMind: Tap the other customers coming to the branch. Use different ways to incentivize them to help each other like adding to their frequent user card points or similar ones.

NoMan: There may not be that many frequent user card customers all the time.

And so the dialogue continues *ad infinitum* for every solution will have secondary problems but the spirit to resolve the problem and the systematic approach to problem solving can provide many innovative ideas.

While we have demonstrated the skill of resource thinking, there are other skills such as contradiction resolution and ideality thinking that also need to be mastered to be effective in overcoming constraints.

Conclusion

Many problem solvers stop short or give up early the moment they encounter a few hurdles or secondary problems to resolve.

Finding different elegant solutions to overcome the constraints is a skill that comes through awareness of the different core skills of innovators and through regular practice on different problems.

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Author Details

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His articles on innovation, lean, and Six Sigma have been published in magazines such as Altshuller Institute, ASQ Quality Progress, Quality Digest, ASQ Six Sigma Forum, TRIZ Journal, IDG Outsourcing World and OUTSOURCING. He is on the book review panel of Pearson Vue (owners of Addison Wesley, Penguin brands).

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