

SYSTEMATIC LATERAL THINKING BY TRIZ

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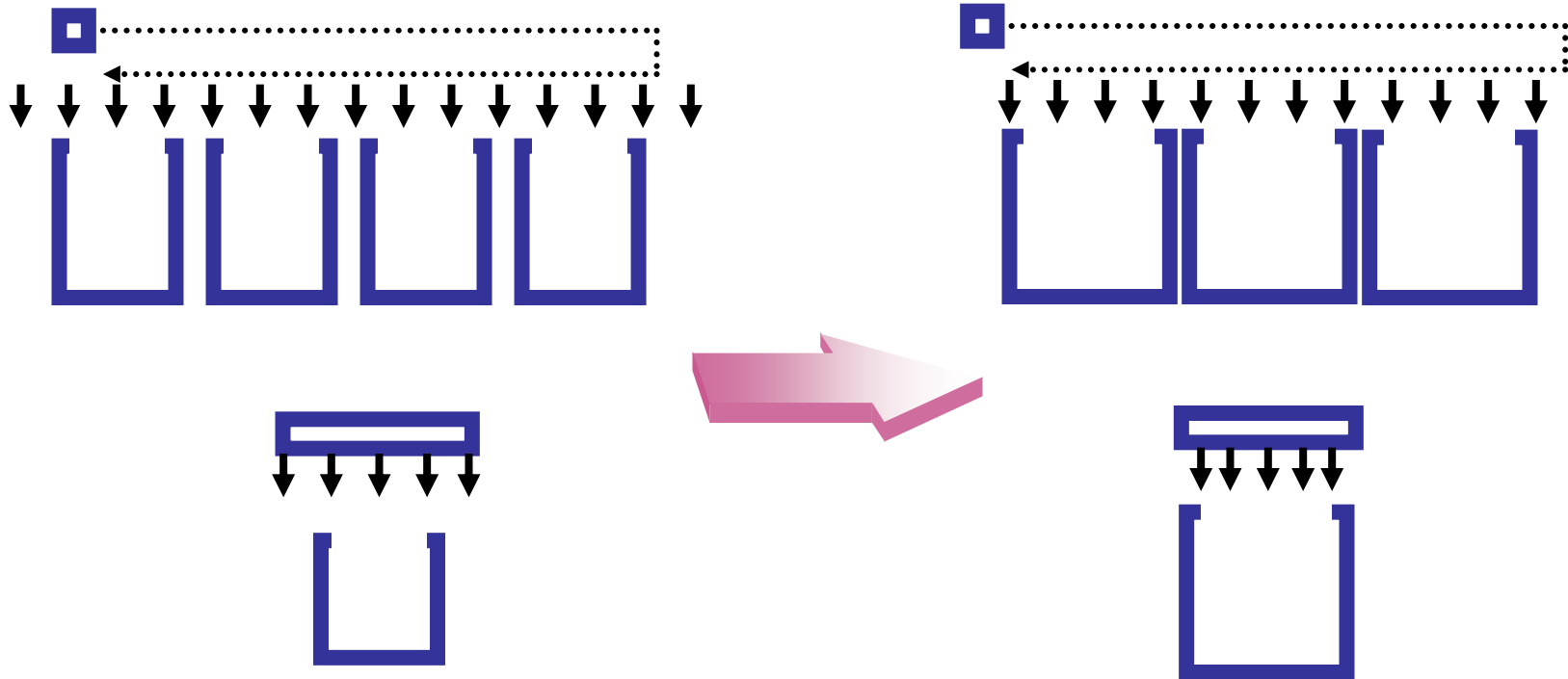
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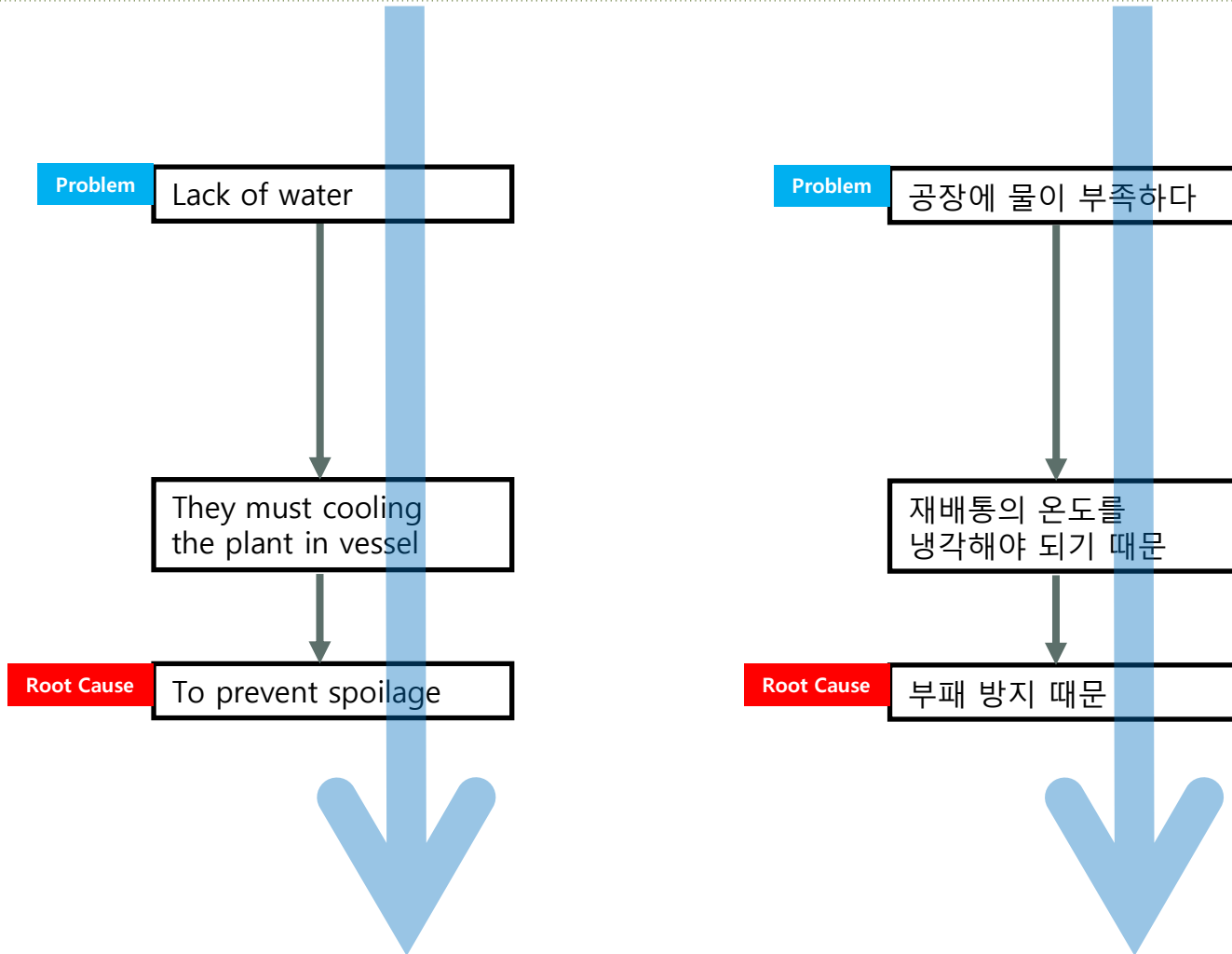
What was the problem in food company?

□ Lack of water in plant cultivation

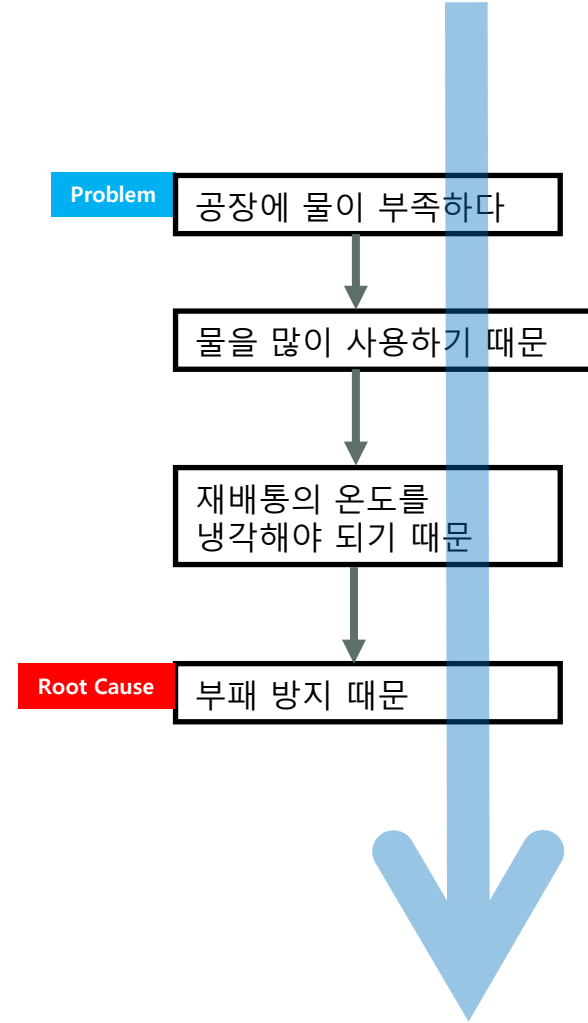
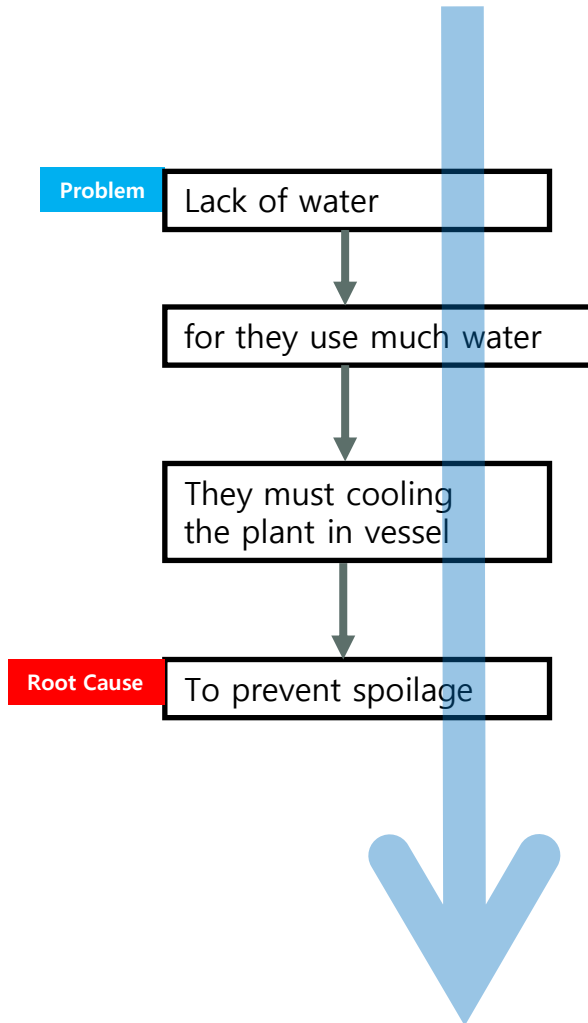
- They must provide sufficient water during 1 week for cooling the growing plant to prevent spoilage.
- Unfortunately, they could produce 30% compared the factory latest advanced equipment.
- They already thought some ideas...
 - ① They had a plan to move the factory.
 - ② In research center, they are studying the gene mutation which will prevent spoilage over 25 Celsius degree.
 - ③ They also modify the size and design of vessel. But too much small result.



Expert's Typical Vertical Thinking

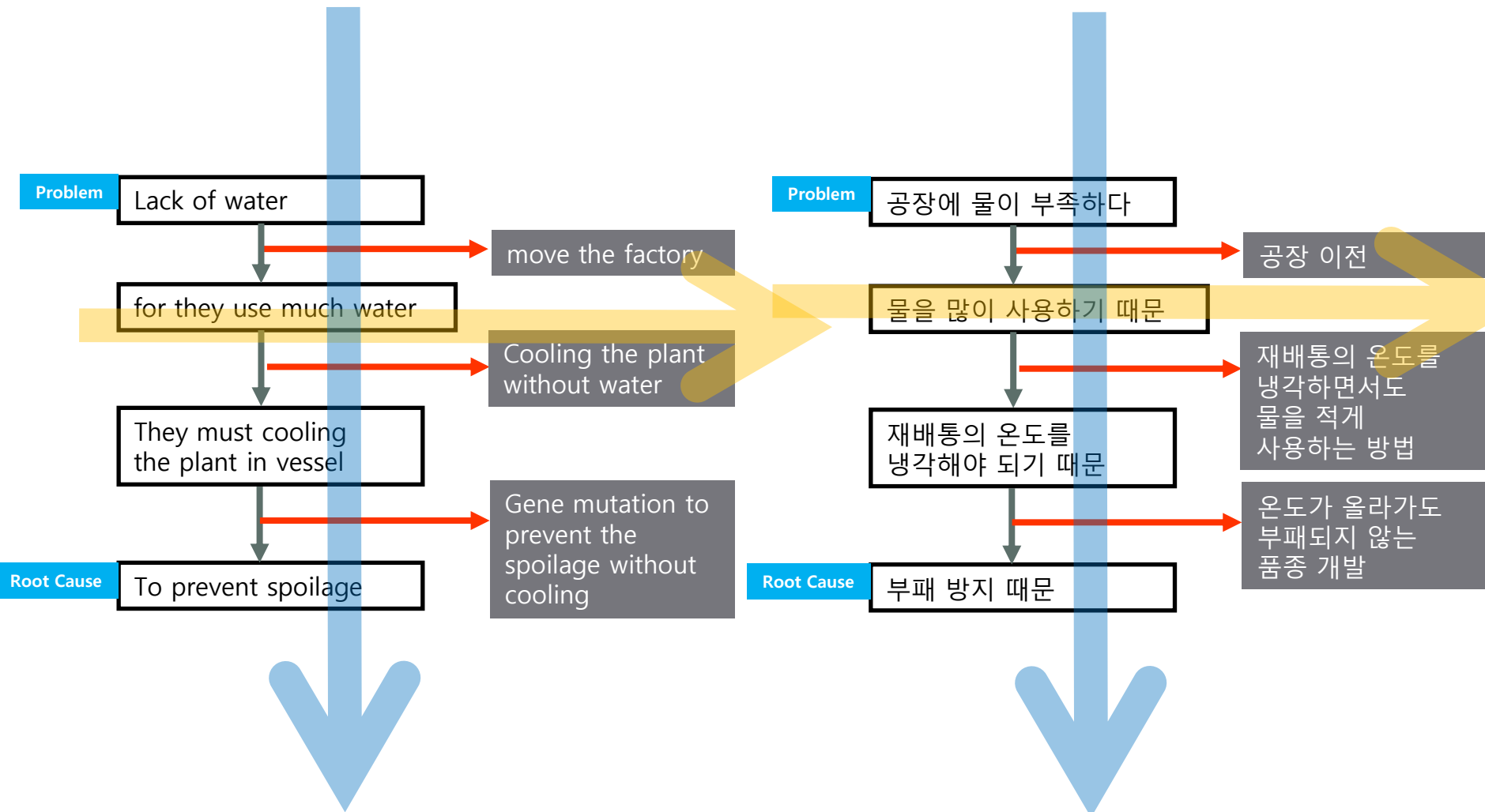


Stupid, but Making sense, Vertical Thinking

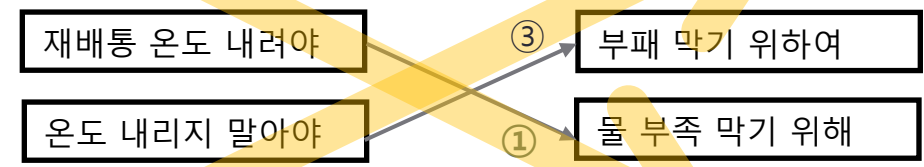
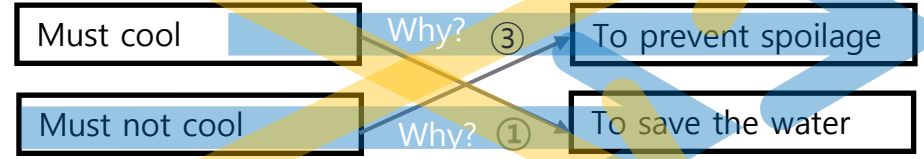
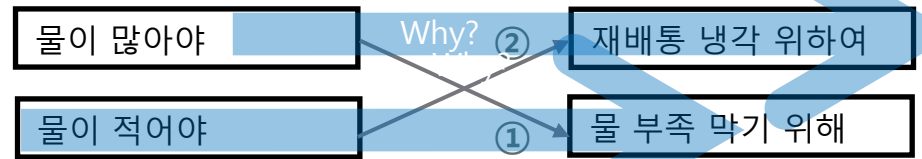
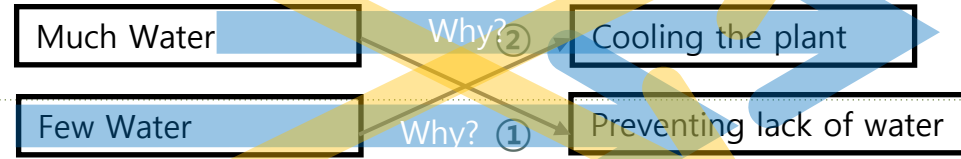
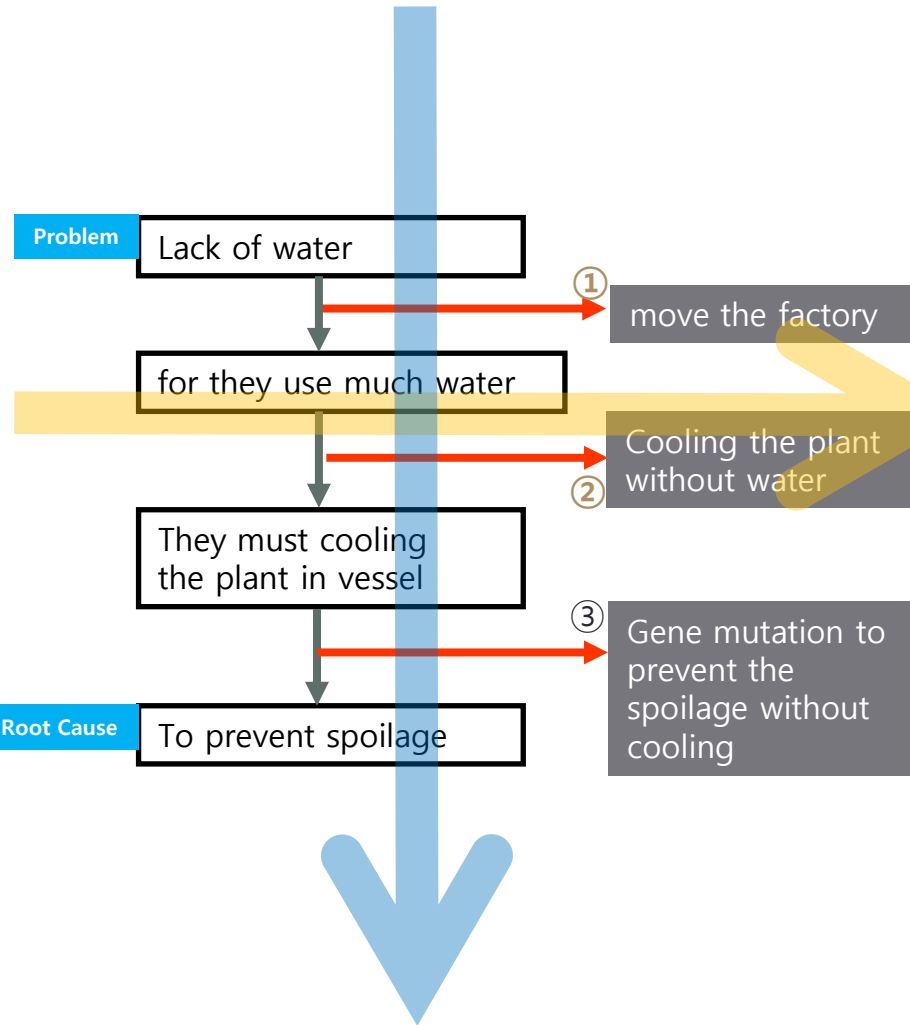


Systematic Lateral Thinking by PCA*, Problem Chain Analysis

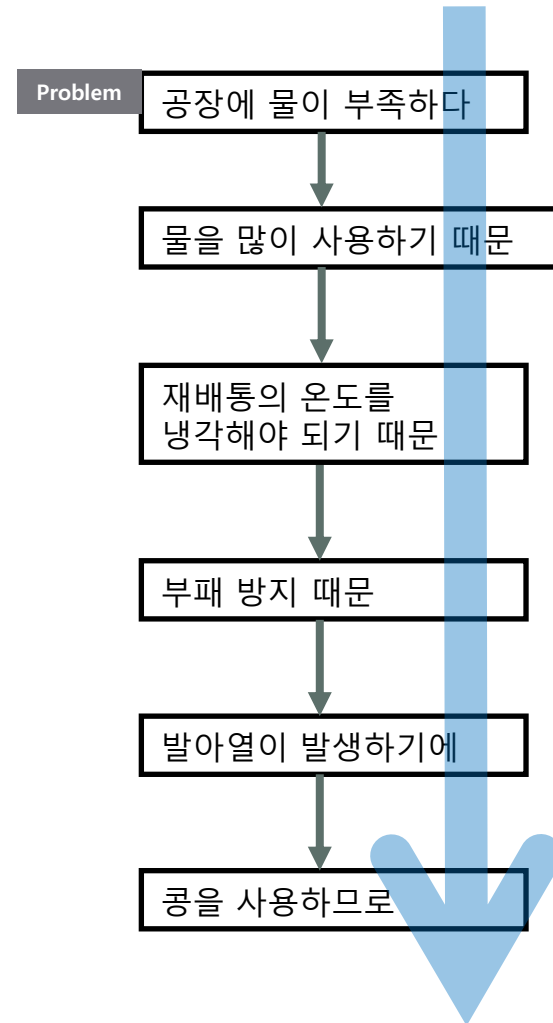
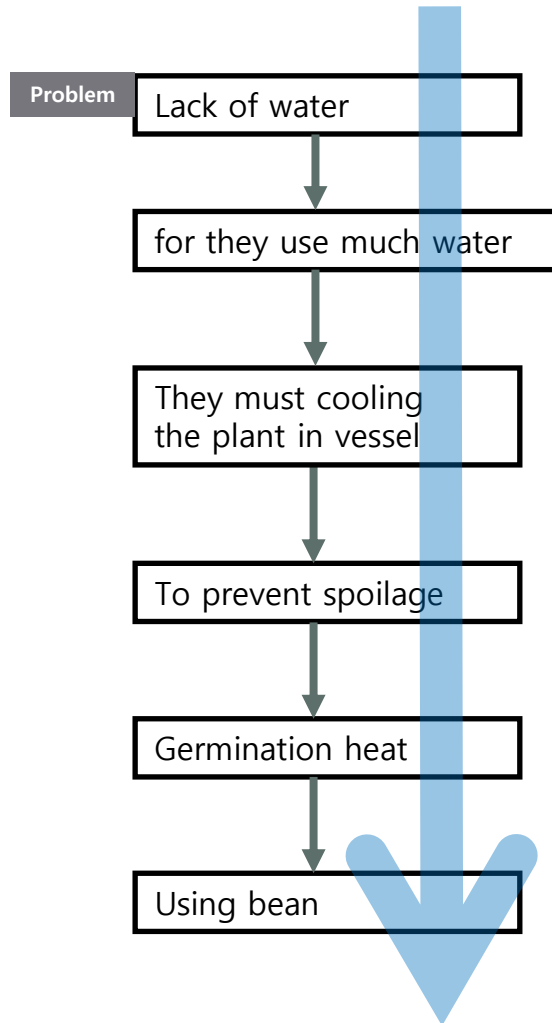
PCA* : 2012 Global TRIZ Conference, Hyo June Kim



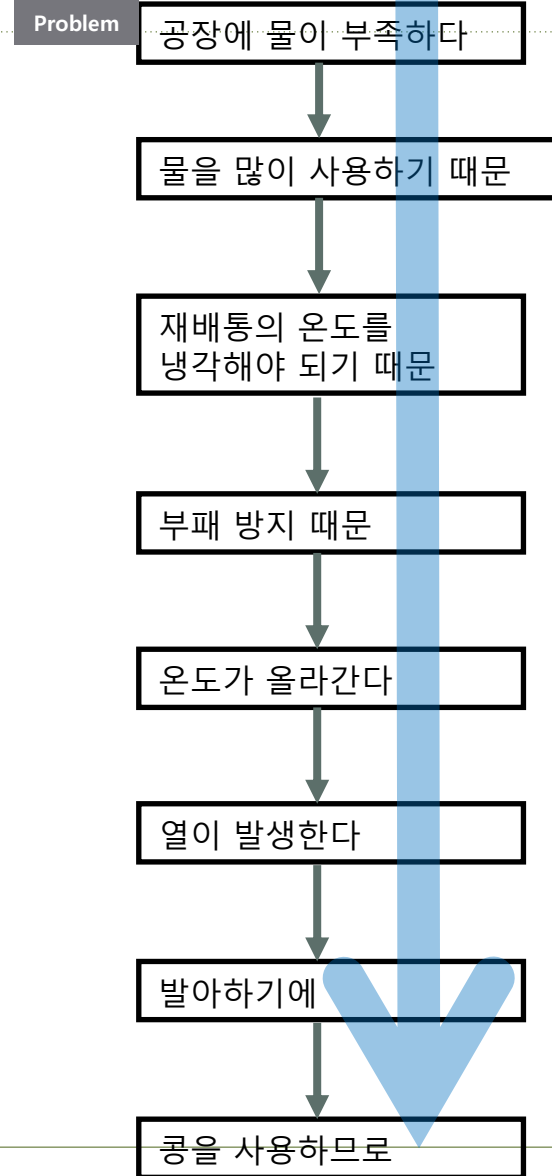
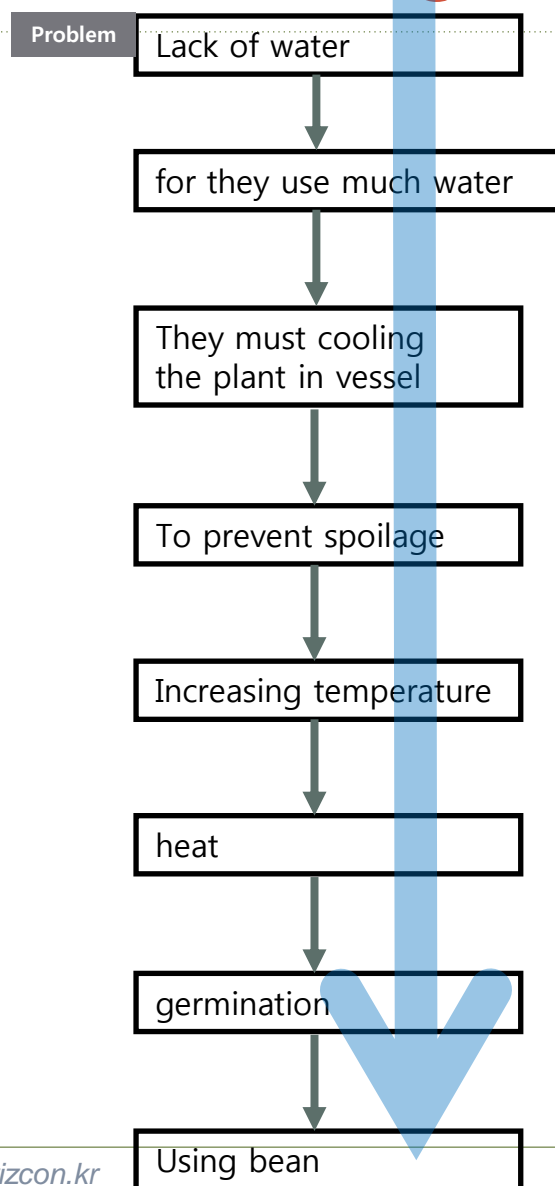
Contradiction, PTC Modeling



Expert's Typical Vertical Thinking



Stupid, but Making sense, Vertical Thinking

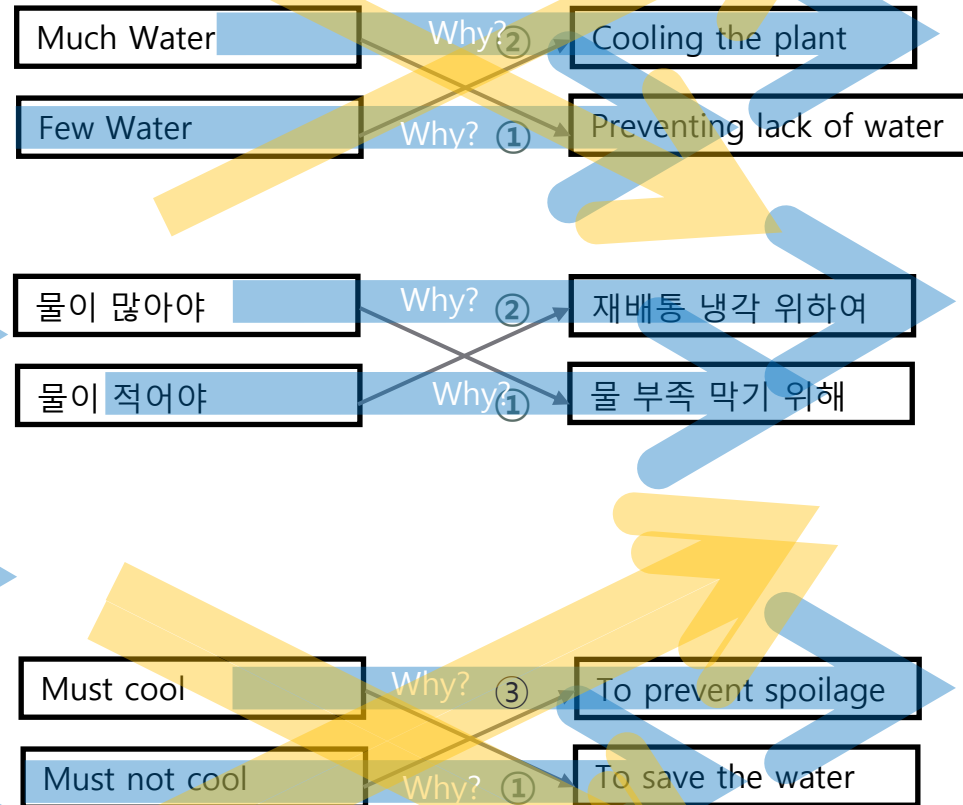


How to make Lateral Thinking

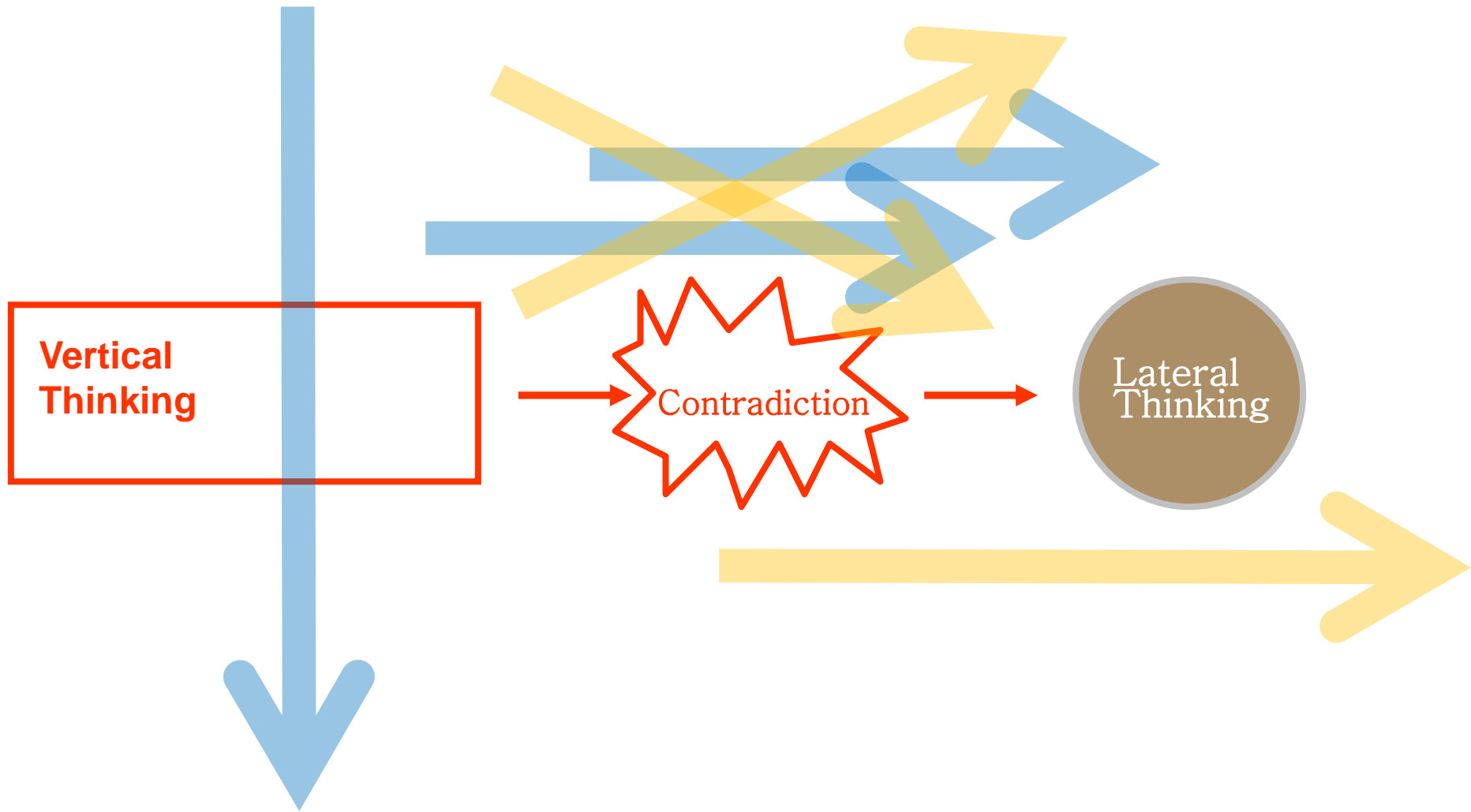
Lateral and Vertical thinking are so complementary, it's important point.



Vertical Thinking and Lateral Thinking in Contradiction structure, PTC* modeling



Contradiction is the bridge point between the Vertical Thinking and Lateral Thinking



The Typical Process of Lateral Thinking

1. Brainstorming	구속한다 사회봉사를 한다 차량 압수한다..... arrest Order social service Impound car	협박한다 벌금형을 처한다 청소를 시킨다 주민등록말소 한다 threaten pine Order cleaning service Removing ID card
2. Grouping	arrest pine Order cleaning service	구속한다 벌금형을 처한다 청소를 시킨다
3. Concept	punishment !!!	처벌 !!!
4. Alternative	Publish the name in internet Elementary school Social Network Service??? 인터넷에 이름을 공개한다. 초등학교 게시판에???	

Most popular TRIZ Process Level 2 is The Typical Process of Lateral Thinking

Contradiction → Tool → Idea → Result, in contest at company. Practically, is it honest?

– One of the typical logic in TRIZ Best Practice Contest at company

- ① The problem is ...
- ② I could find TC
- ③ I derived 2 factor from 39 standard parameters
- ④ Using matrix, #24 and #14 principles were recommended
- ⑤ Applying #14, I could solve TC and apply for a patent

But, this is usually called ‘paper work’!

– Many great results after using TRIZ in global company appear as follow...this will be real situation.

- ① The problem is ...
- ② He could not find Contradiction. Too many TC and invisible PC!
(at this time, many person give up TRIZ, and say “TRIZ is attractive but too difficult to use, it’s just theory)
- ③ It’s so annoying, contradiction! He just apply 40 principles and separation principles.
Then Good Results appear soon.
- ④ Company order him to do presentation at TRIZ Contest. So he must prepare 10 slides for TRIZ report.
- ⑤ So he think “Why do #14 principle solve problem?”. “Yes, there is TC between A and B!”
- ⑥ After assurance about contradiction, he could extract another good solutions more.
- ⑦ Finally he could make logical report “contradiction → matrix → principles → idea → result”

Almost real work in the world is paper work. Work and document is typically different

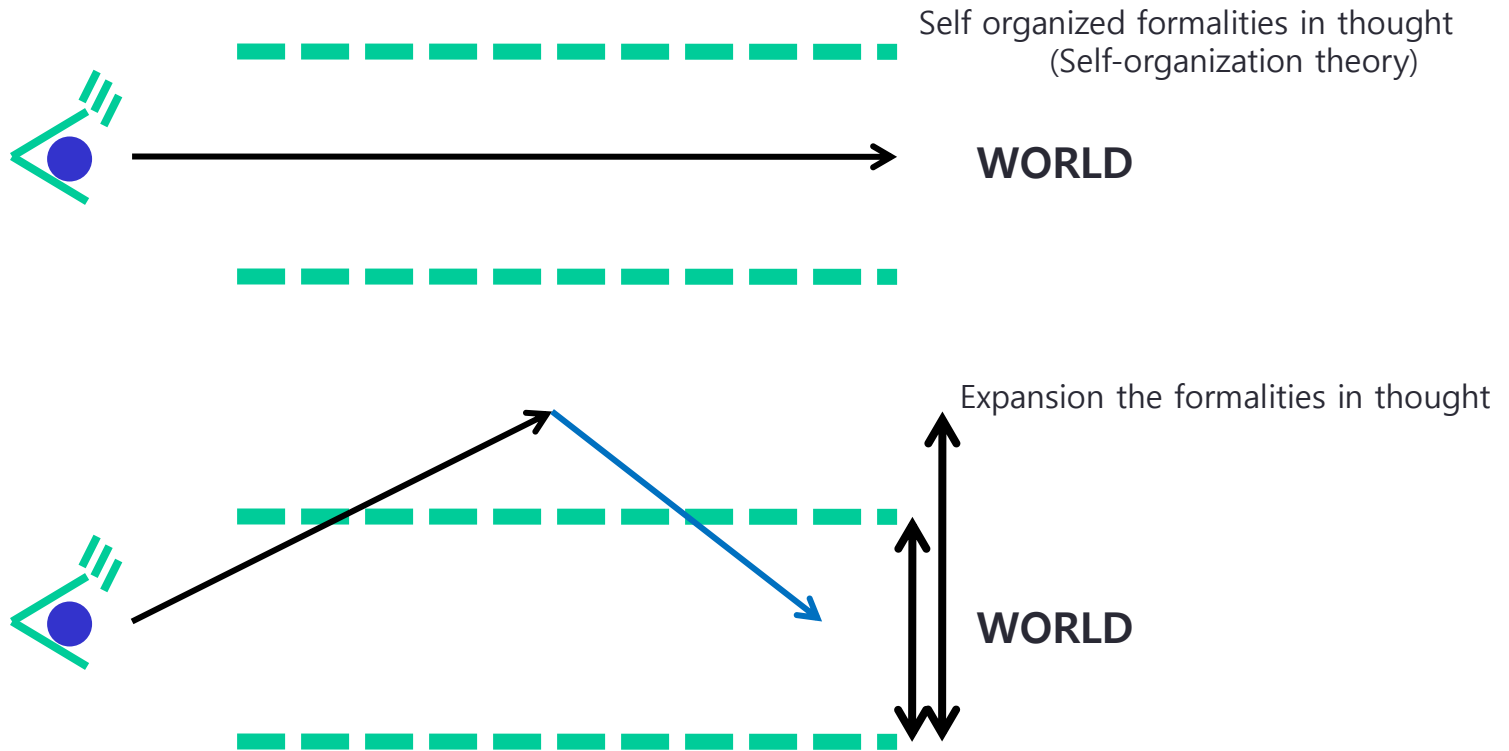
– Core process in Lateral thinking of Edward De Bono

- ① Typical Brain Storming → 40 principles and Separation principles
- ② Grouping → paper work, reverse engineering “yes this is contradiction”
- ③ Concept (called Fixed Point) → “yes this is contradiction”
- ④ Alternative → after finding contradiction, he could extract another various solutions

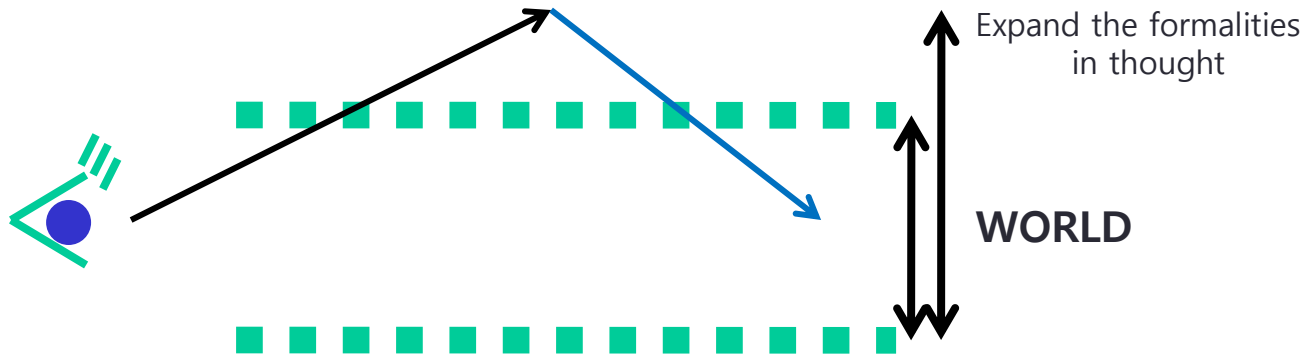
– This is TRIZ Process Level 2 (this is true situation, practical way.

Some kinds of Creative thinking way based on Lateral Thinking of De Bono

The Creativity by Edward De Bono



TRIZ suggest concrete formalities in thought after analyzing millions patents in the world



01, Segmentation	쪼개어보다	21, Hurrying	안 좋은 것은 후딱
02, Extraction	필요한 것만 뽑아내다	22, Convert Harmful to Useful	안 좋은 것은 좋은 것으로
03, Local Quality	전부 똑같이 할 필요 없다	23, Feedback	피드백이 되게
04, Asymmetry	대칭이면 비대칭으로	24, Intermediate	중간매개물을 활용
05, Consolidation	여러 번을 한 번으로	25, Self-service	자동으로, 스스로 하게
06, Multifunction	하나를 여러 용도로	26, Copy	복사
07, Nesting	포개어보다	27, Cheap Short Life	값싸고 짧은 수명
08, Counter Weight	지구중력 회피하자	28, Replacing Mechanical System	기계시스템은 광학이나 음향으로
09, Preliminary Counter Action	미리 반대로 조치하다	29, Pneumatics and Hydraulics	공기나 유압을 사용
10, Preliminary Action	미리 조치하다	30, Flexible Shell and Thin Film	얇은 막
11, Preliminary Compensation	미리 예방하다	31, Porous Material	다공성 물질
12, Equipotential	들어서 옮길 필요 없다	32, Optical Property Change	색상변화
13, Do It Reverse	역발상, 반대로 하기	33, Homogeneity	동질성을 가지다
14, Curvature Increase	직선은 곡선으로, 직사각형을 벗어나자	34, Discarding and Recovering	폐기 및 재생
15, Dynamicity	고정된 것은 움직이게	35, Parameter Change	속성 변화
16, Partial or Excessive	일부러 부족하게 혹은 초과하게	36, Phase Transition	상변화를 이용하자
17, Dimension Change	수평이면 수직으로	37, Thermal Expansion	열팽창을 이용하자
18, Vibration	진동을 이용하자	38, Strong Oxidants	산화제
19, Periodic Action	주기적으로 동작	39, Inert Atmosphere	불활성환경
20, Continuity of Useful Action	유용한 작용을 연속으로	40, Composite Material	복합재료

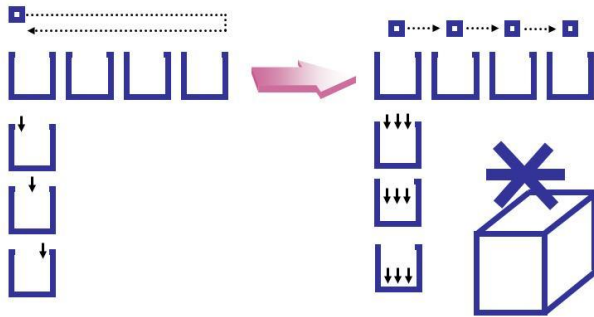
1. Separation in TIME
2. Separation in SPACE
3. Separation in SCALE

Ideal Final Result
Contradiction
Resource

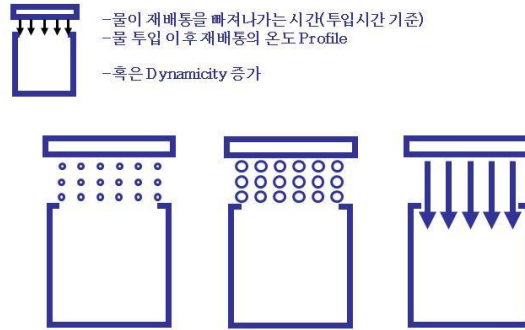
...

Overcoming 40 formalities in thought to think just mistaken ideas

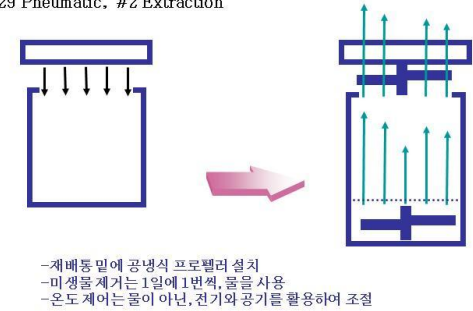
□ #3 Local Quality, #19 Periodic Quality



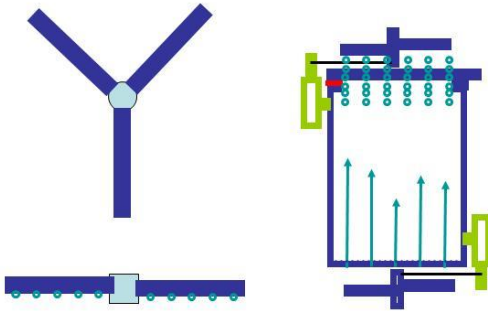
□ #35 Parameter Change



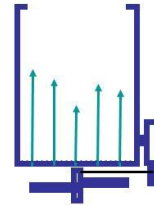
□ #29 Pneumatic, #2 Extraction



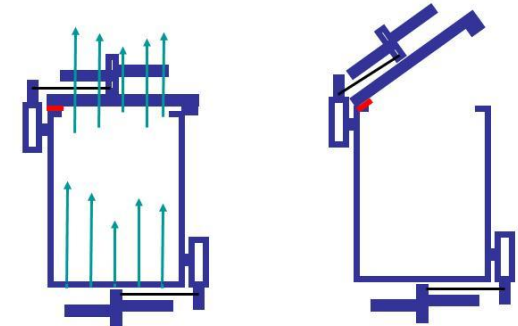
□ 웬의 날개에서 물을 뿌리게 한다 #6 Multifunction



□ 모터와 웬은 벨트로 연결하여 물이 떨어지는 곳을 피해 모터를 설치



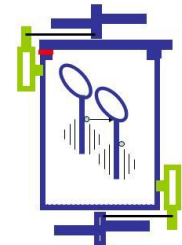
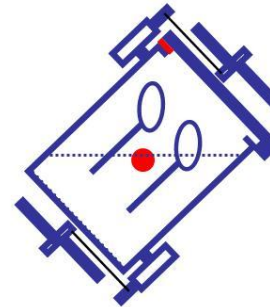
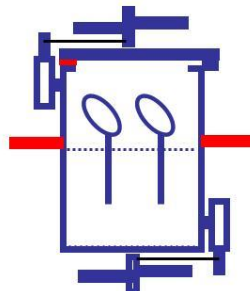
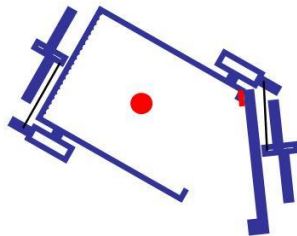
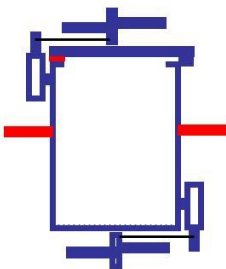
□ 개폐식 덮개 설치, 상부에도 웬을 설치 #22 Continuity of useful action



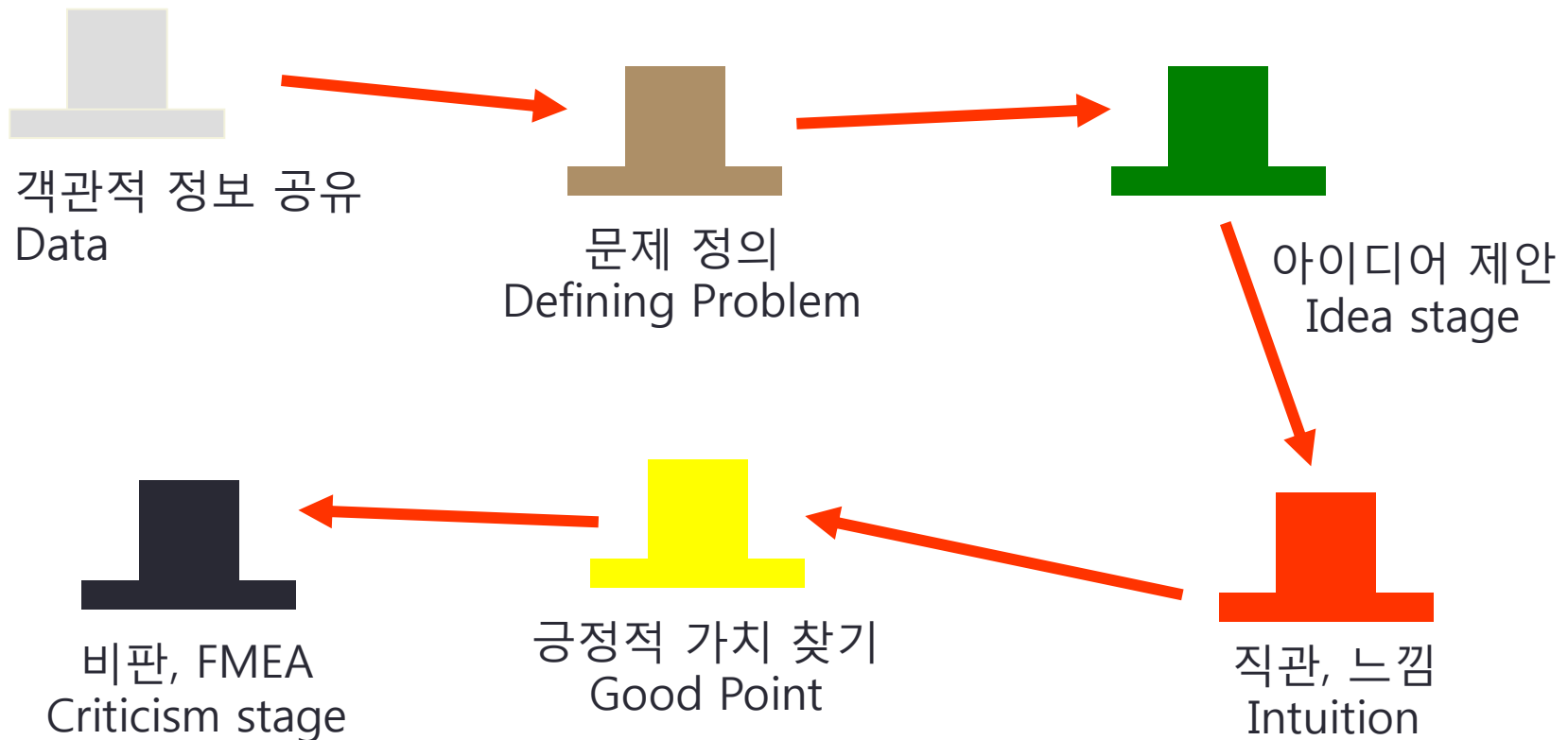
□ 무게 중심의 위치에 봉을 설치 #12 Equi-Potential

□ 세탁기의 물은 충분히 활용해서 배출한다 #4 Asymmetry

□ 진동이 저절로 생긴다 #4 Asymmetry



Six Thinking Hats, What is Creativity?



Why '6 Thinking Hats' is help in creative thinking?
Because Idea stage and criticism stage is separated far away.
Because Creative thing is lateral thinking, ie thinking just mistaken idea.
Just mistaken idea is usually weak, not strong, not complete.
So just mistaken idea, Lateral Thinking must avoid objective criticism for creativity