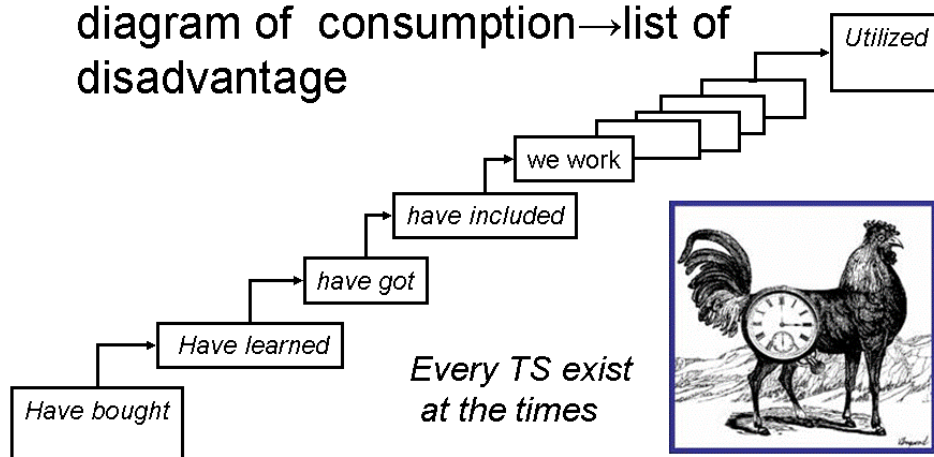


5 tools from Disadvantage Theory

- Formula 1: TS consideration in the time → diagram of consumption → list of disadvantage
- Formula 2: Disadvantage → Useful recommendation from TESE → Idea for solution
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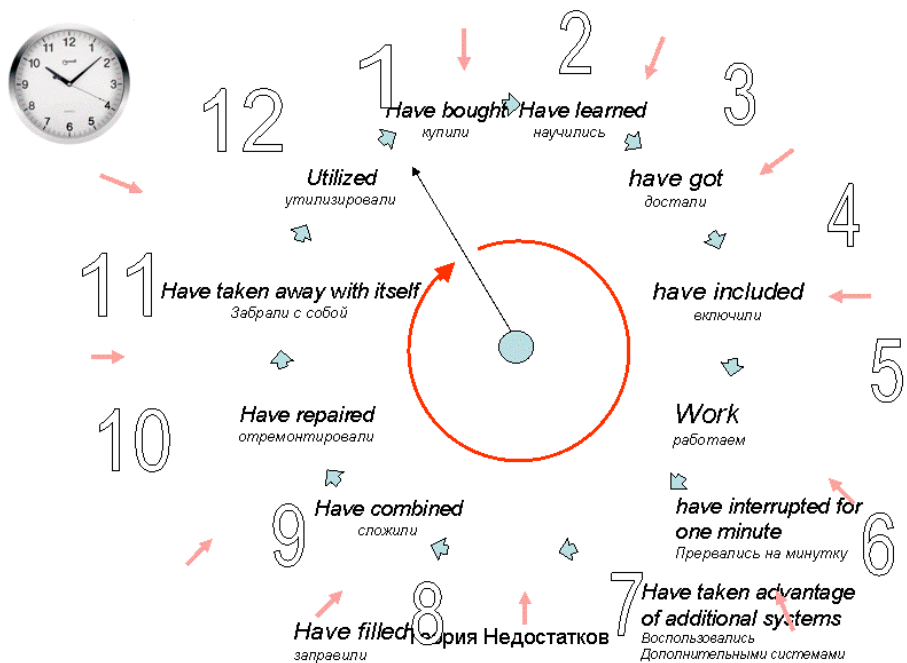
List of disadvantage

- Formula 1: TS consideration in the time → diagram of consumption → list of disadvantage



Any system exists in a cycle "use" and it is one more useful "map"

любая система существует в цикле «использование» и это ещё одна полезная «карта»

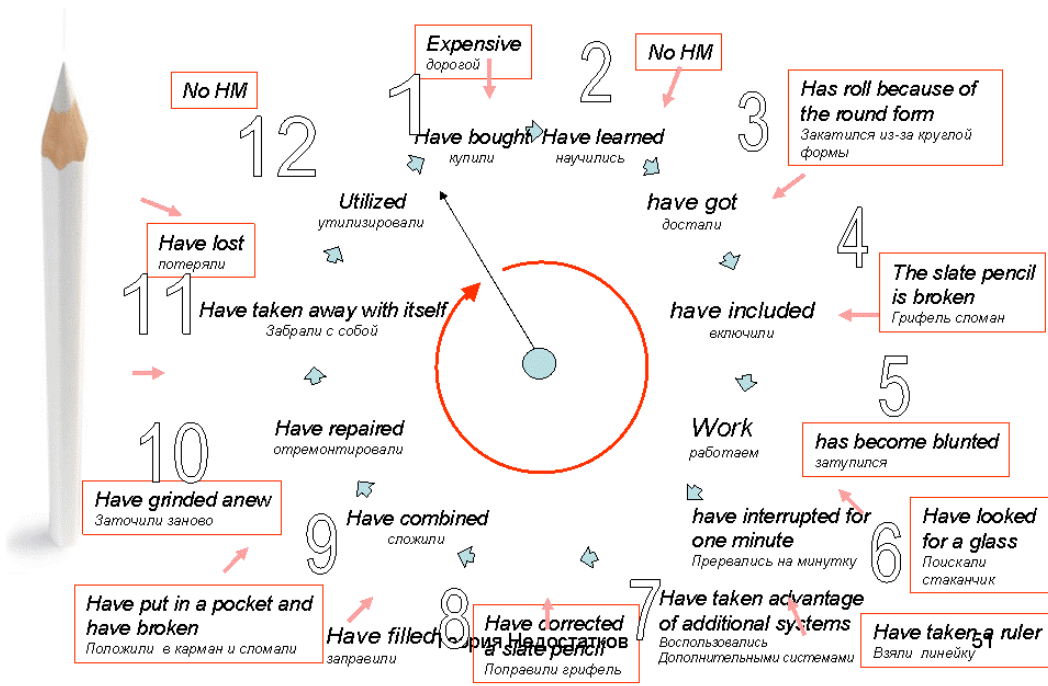


50

ОПРЕДЕЛЕНИЕ МЕСТА РАСПОЛОЖЕНИЯ НЕДОСТАТКА

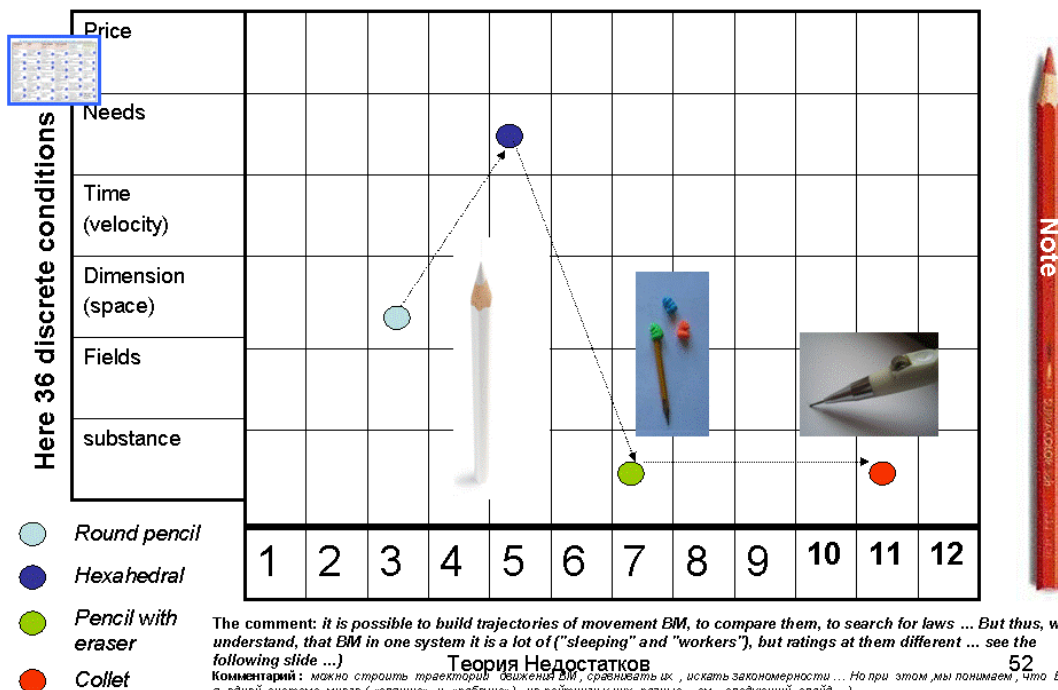
Example: a cycle of "use" for a pencil

Пример: цикл «использования» для карандаша



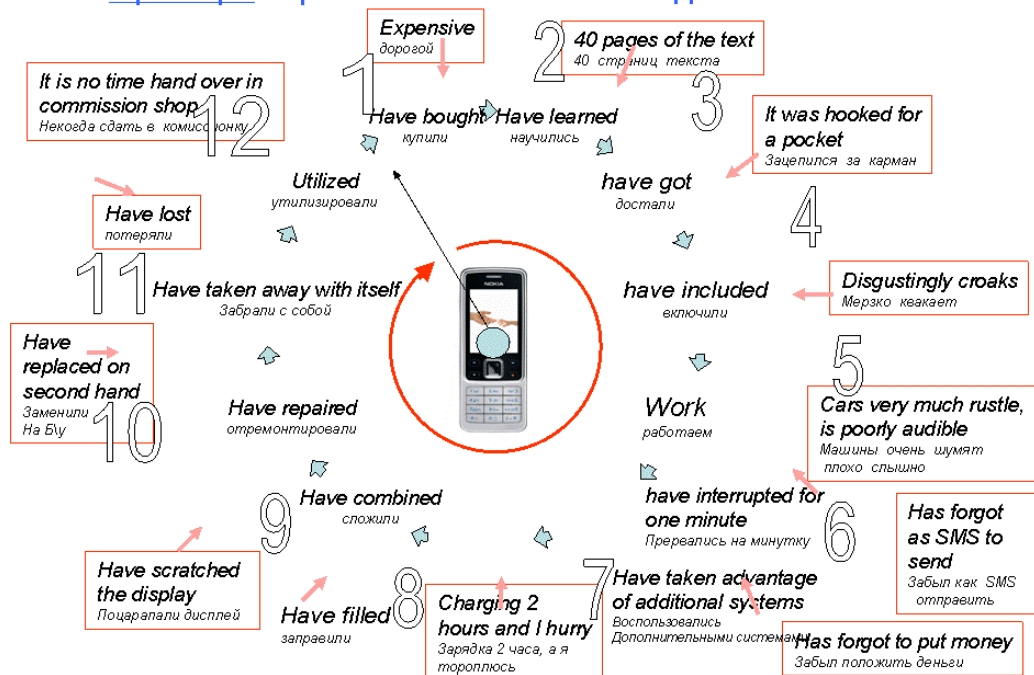
The diagram "Wandering" BM on system time. It is a technique of revealing of laws in TRIZ researches

Диаграмма «Блуждание» BM по системному времени. Это методика выявления закономерностей в ТРИЗ исследованиях



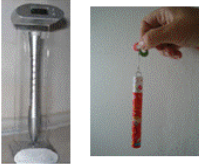








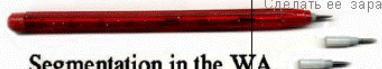
Example: a cycle of "use" for a mobile phone


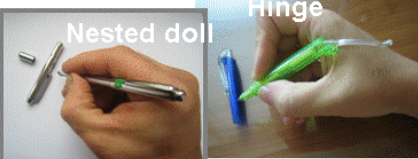






Пример : цикл «использования» для мобильного



12 Questions of forecast

№ Phase	Variant of the question	Variant of the answer <i>reaction of market</i>
<p>2. Have learned</p> 	<p>What to make, that it was not necessary to study? How "to destroy" process of long training? Что сделать, чтобы не нужно было учиться? Как «разрушить» процесс долгого обучения?</p>	<p>Brush Felt-tip pen Кисточка Фломастер</p> 
<p>3 Have got</p> 	<p>How "to destroy" expenses for searches, extraction? Как «разрушить» затраты на поиски, извлечение?</p>	<p>Key ring Magnet for facility of the extraction Брелок, магнит для удобства извлечения</p> 
<p>4 Have included</p> 	<p>How to reduce time (energy) of inclusion? Как уменьшить время (энергию) включения?</p>  <p style="text-align: center;">Теория Недостатков</p>	<p>Button or wheel under forefinger Кнопка или колёсико под Указательный палец</p> 

<p>5 Work</p> 	<p>How "to destroy" expenses for change of color? How "to destroy" expenses for weariness? Как «разрушить» затраты на смену цвета? Как «разрушить» затраты на усталость?</p> 	<p>Multicoloured pen +crosspiece Многоцветный Карандаш + крестовина</p> 
<p>6 Have interrupted for one minute</p>	<p>How "to destroy" expenses for a minute break or derivation? Как «разрушить» затраты на минутный перерыв или отвлечение?</p>	<p>Thimble on an index finger Напёрсток на указательный палец</p> 
<p>7 Have taken advantage of additional systems</p>	<p>How "to destroy" expenses for use of auxiliary systems? The calculator the Small lamp Как «разрушить» затраты на использование вспомогательных систем?</p> 	<p>Sticky stripe</p> 
<p>8 Have filled</p> 	<p>How to destroy "refuelling"? Как разрушить «заправку»?</p> <p style="text-align: center;">Segmentation in the WA, Preliminary action, "Matrioshka" (a nested doll)</p> 	<p>To make it beforehand Сделать её заранее</p> 

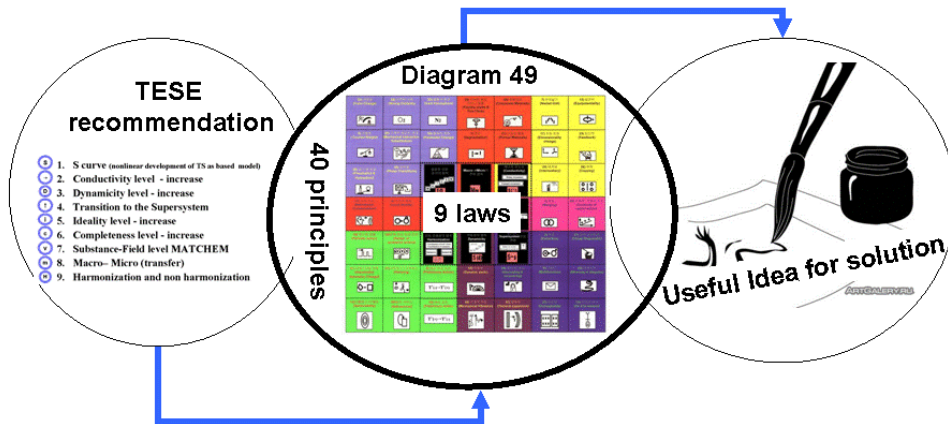
<p>9 <i>Have combined</i></p> 	<p>How "to destroy" lack of the small size after addition? Как «разрушить» недостаток маленького размера после сложения?</p>	 <p>Nested doll Hinge</p>
<p>10 <i>Have repaired</i></p> 	<p>How to destroy expenses of time for repair? Expenses of time for search of means of repair? Как разрушить затраты времени на ремонт? Затраты времени на поиск средств ремонта?</p>	 <p>Beforehand sharpening Pencil sharpener</p>
<p>11 <i>Have taken away with itself</i></p> 	<p>How to destroy transport influences, except for use of cases or devices of promotion? Как разрушить транспортные воздействия, кроме использования футляров или устройств выдвигения?</p>	 <p>case dwarf</p>
<p>12. <i>Pay for utilization</i></p> 	<p>How "to destroy" (to reduce) charges on recycling? Как «разрушить» (уменьшить) расходы на утилизацию?</p>	 <p>Paper pencils Sharpening by opening of the paper</p>

Теория Недостатков

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Add target 2 of HMT



- **Formula 4:** TESE recommendation → diagram of relationships between 9 Laws and 40 principles → Idea for solution

Теория Недостатков

58

32) 색깔 변화 (Color Change)	38) 강력한 산화제 (Strong Oxidants)	39) 불활성 분위기 (Inert Atmosphere)	30) 유연한 껍질 - 얇은 막 (Flexible shells & Thin Films)	40) 복합 재료 (Composite Materials)	7) 인형뽑기 (Nested Doll)	12) 등전위 (Equipotentiality)
8) 무게추 (Counter Weight)	28) 기계적 상호작용 대체 (Mechanical Interaction Substitution)	35) 매개변수 변화 (Parameter Change)	11) 분할 (Segmentation)	31) 다공성 물질 (Porous Materials)	17) 차원 변경 (Dimensionality change)	23) 피드백 (Feedback)
29) 공기 역학 및 수력학 (Pneumatics & Hydraulics)	36) 상변태 (Phase Transitions)	물결상, 경계층, 두꺼운 막	Macro → Micro의 상이 변칙	회전 전도성 (Conductivity)	24) 중간체 (Intermediary)	28) 복제 (Copying)
14) 사전 보상 (Beforehand Compensation)	34) 지역적 질량 (Local Quality)	완전성 (Completeness)	곡률의 증가와 불균형적인 발전 (S-Curve)	이상성 증가 (Ideality)	합류 (Merging)	20) 유용한 행동의 지속 (Continuity of useful action)
19) 주기적 행동 (Periodic action)	19a) 부분적 또는 선택적 행동 (Partial or selective action)	조화 (Harmonization)	동적성 (Dynamicity)	Supersystem으로 변환	21) 추출 (Extraction)	27) 저렴한 처분 (Cheap Disposal)
4) 대칭 / 비대칭 변화 (Asymmetry / Symmetry Change)	21) 혼란 (Murky)	1) 예비 행동 (Preliminary Action)	15) 역동성 (Dynamic parts)	34) 버리고 되찾기 (Discarding & recovering)	6) 다목적 (Multifunction)	22) 복고 (Blessing in disguise)
14) 구형성 (Spheroidality)	39) 셀프 서비스 (Self-service)	10) 예비 행동 (Preliminary Action)	18) 기계적 진동 (Mechanical Vibration)	37) 열팽창 (Thermal expansion)	33) 균질성 (Homogeneity)	13) 반대로 하기 (Do it in reverse)

Теория Недостатков

59

40 correspond with 9 Laws

- S 1. S curve (nonlinear development of TS as based model)
- + 2. Conductivity level - increase
- D 3. Dynamicity level - increase
- I 4. Transition to the Supersystem
- I 5. Ideality level - increase
- v 6. Completeness level - increase
- v 7. Substance-Field level MATCHEM
- m 8. Macro- Micro (transfer)
- H 9. Harmonization and non harmonization

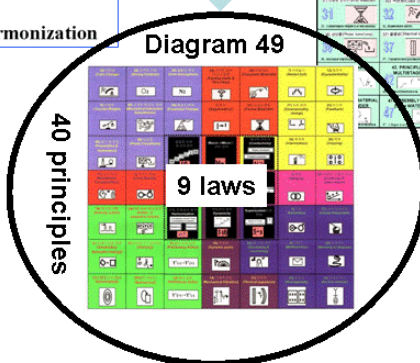


diagram of relationships between 9 Laws and 40 principles

32. CHANGING COLOR	38 STRONG OXIDERS	39 INERT ATMOSPHERE	30 FLEXIBLE CHELS AND THIN FILM	40 COMPOSITES	7 NESTED DOLL	12 EQUI POTENTIALITY
8 ANTY-WEIGT	28 MECHANICAL PRINCIPLE REPLACEMENT	35 CHANGE OF PHYSICAL AND CHEMICAL PARAMETERS	1 SEGMENTATION	31 POROUS MATERIAL	17 ANOTHER DIMENSION	23 FEEDBACK
29 PNEUMATIC AND HYDRAULIC STRUCTURES	36 PHASE TRANSITIONS	11 VEPOL of increase of a SU-Field level f MATCHEM (B.Zlofin)	12 MACRO- MICRO TREND 1.31 TREND 1.32 TREND 1.33	13. CONDUCTIVITY TREND 1.31 TREND 1.32 TREND 1.33	24 INTER MEDIARY	26 USE OF COPIES
11 BEFOREHAND CUSHIONING	3 LOCAL QUALITY	21. COMPLETENES S TREND 1.31 TREND 1.32 TREND 1.33	22. S Curve + TREND 1.31 TREND 1.32 TREND 1.33	2.3 IDEALITY TREND 2.31 TREND 2.32 TREND 2.3.3	5 MERGING	20 USEFUL ACTION CONTINUITY
19 PERIODIC ACTION	16 PARTIAL OR EXCESSIVE ACTION	31 HARMONIZATI ON TREND 1.31 TREND 1.32 TREND 1.33	32 DYNAMISITY TREND 3.21 TREND 3.22 TREND 3.23	33 SUPER SYSTEM TREND 3.31 TREND 3.32 TREND 3.3.3	2 EXTRACTION	27 CHEAP SHORT LIFE INSTEATED OF COSTLY LONG LIFE
4 ASYMMETRY	21 SKIP	9 PRIOR COUNERACTION	15 DYNAMISITY	34 REGECTIONS AND REGENERATION S OF PART	6 UNIVERSALITY	22 TURN THE HARM TO ONE'S GOOD
14 SPHEROIDALITY	25 SELF- SERVICE	10 PRIOR ACTION	18 MECHANICAL TRANSITION	37 THERMAL EXPANSION	33 HOMO GENEITY	13 OTHER WAY ROUND

Special database of examples

