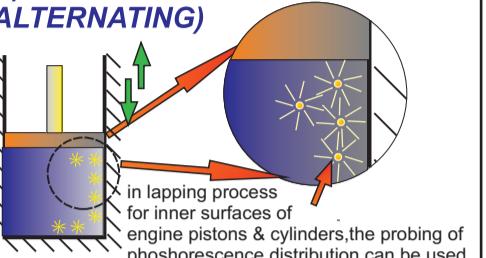
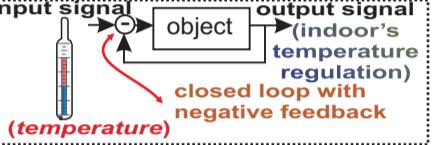
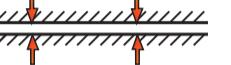
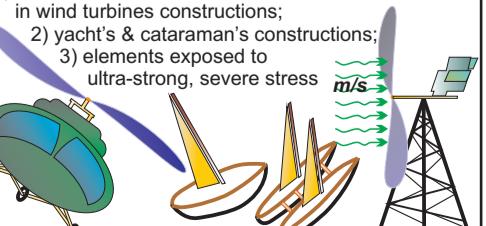


A) 40 principles of invention in sketches, rendered into form of vector graphics

01) DIVISION	11) BEFOREHAND CUSHIONING	21) SKIPPING, QUICK MODE, OR PACE OF REALIZATION	31) POROUS MATERIALS
a) a ship built, made of removable / replaceable bulkheads b) multi-engine aircraft c) multi-piston engine of internal combustion d) a toy made of Lego blocks e) breakable chocolate f) multi-grip fixtures g) a banded file of paper sheets h) multi-blade cartridge razors i) multi-blade airscrews of aircrafts, or wind power-plants	a) for instance: a method of "dressing" of the cut tree branches (this action actually forces a tree to beforehand reaction, to gather a pressure band) b) driver's airbag c) masking of the chosen elements, within patches on the object, before its painting d) gathering crops in summer and autumn seasons, while preparing for winter harsh weather conditions	a) wood-borne materials in quick thermal processing b) laser treatments of biological tissues or in processing of hardly processed materials (both extremely soft and extremely hard), without deformations, scratching burnings c) pico-second pulsed lasers (from nanosecond lasers) against laser of micro- and nano-seconds pulses (various materials virtually have been vapoured, while treated with pico-second pulsed laser beam of energy) d) steel hardening process in abrupt temperatures changes	a) aerated concrete (porous concrete) b) porous abrasive tools c) polyurethane foam d) catalysing surfaces in chemistry e) "vacuum" as a "construction building material" f) openwork structures reinforcements g) porous, sponge materials in kitchen getters
02) TAKING OUT	12) EQUIPOTENTIALITY	22) "BLESSING IN DISGUISE" (CONVERT HARM INTO BENEFIT)	32) COLOUR CHANGING (ALTERNATING)
a) taking of notoriously noisy power unit, or compressor out of the main boat b) {engines, turbines, blades} combined with internal ducts for air ventilation system, taken out of the building, i.e. placed on the buildings elevations c) sound of bird's predator, previously registered on a tape, and played back, can be used scaring away the birds, notoriously flying near or around the airports	a) a sequence of linear movements is replaced by single seamless movement on section of arc a heavy element of the press, lifted up, and carried away usually in sequence of linear movements, is replaced with press deflected on remotely fasten long arm b) dissolvable surgeon threads c) rather to cool down stuck inner object, than to heat up other bigger outer object, which seizes the former one	a) burning out main in outskirts of the main fire, to cut off fire's fuel b) to blow out inside/outside of the burnings c) permafrost materials are to be "treated" with liquid nitrogen 0°C the material's permafrost rapidly "liquefies"	
03) LOCAL QUALITY	13) INVERSION (UPSIDE DOWN)	23) FEEDBACK PRINCIPLE	33) HOMOGENEITY
a) dustless excavation of coal - the dust is captured by tiny droplets inside of the water cone - bigger droplets outside of the cone keep the dust in a place b) weighed average from marks c) weighed estimation produced for rankings of computers, printers, etc.	a) for instance: in reversing the working mode of vacuum cleaner (then, vapour could be used in cleaning of carpets) b) to turn mounted object upside down, on assembling line c) turning (object in move, while motionless turning tool), against milling (mobile milling cutter) d) binary tree's structure is sought from root to leaves in one (in-depth) search algorithms, while another algorithm seeks through nodes from leaves to root	a) basically, as well as particularly:  b) autopilot provided with 3-axis gyro system c) robot arms movement's back-controlled in set of: 1) diode - 2) photodiode - 3) semi-transparent either: protractor, or: linear scale - placed in between	the two interfacing surfaces should be made of the same material  moreover, the similarities can be applied, regarding: - comparable mat.'s hardness, chemical inertion, structures, - comparable thermal expansion's coefficients, (in case of dental materials; metal-glass conjunctions), - comparable electro-chemical potentials (in avoiding electro-chemical borne corrosion) - same fatigue characteristics, and amortization specifics
04) ASYMMETRY	14) SPHEROIDALITY, CURVATURES	24) INTERMEDIATE MEANS, "FITTING" PRINCIPLE	34) DISCARDING & RECOVERING, (REJECT & PARTS REGENERATION)
a) pneumatic tire asymmetrically reinforced from outside, due to contact with pavement curb b) left- or right-handed rules of priority, in right of road c) slanted concrete mixer, blender, d) asymmetrically built conjunctions, handles e) asymmetrically defined functionality of the "trap-the-door" mechanisms f) asymmetrically built car, due to either left- or right-sided driver's sit	a) applications of: bearing rollers, spirals, shafts, spheres, demi-domes b) replacement of linear movements by circular movements c) application of arcs in architecture d) circular accelerators (synchrotrons / magnetrons) in place of concept of linear accelerators of particles e) extensible, retractable measuring tape	a) in electronic circuits fitting either of: - impedance, - or resistance, of input source to the receiver b) fitting in mean of: - pressure-flowing (fluid mechanics), - loading of force moments, in transmission gears (mechanical fitting) - stress of two interfacing surfaces (endurance)	a) IV stage dissolvable medication capsules made of (biologically inert material) b) III stage rocket's stages subsequently discarded during the flight c) II stage cornstarch-based packages for dry products
05) MERGING	15) DYNAMICS	25) SELF-SERVICING PRINCIPLE	35) CHANGING STATE, PARAMETERS, PROPERTIES OF MATERIALS
a) several computers combined into functioning network b) a hedge made of pales c) textiles made of wool/poliestre/cotton fibres d) roofing tiles combined into coverage of house roof e) mobile concrete mixer, mobile crane, refrigerator, merged into single mobile machine unit, combining of the stationary machines with mobile undercarriages	a) automatically extensible/opened doors, air-locks, etc., reacting when it is needed b) automatic gears in mobiles c) undercarriages in cars of variable stiffness characteristics, tuned exactly d) electronic controllers for carburetor, electronically controlled fuel injection in dependency of driving conditions	a) Self-servicing system's deicing system b) halogens constant regeneration of tungsten glower within bulb of halogen lamp tungsten atoms sublime into halogens then, to redeposit on tungsten glower	1) high temperature food processing 2) low-temperature food preserving 3) a product ready for further processing step (for submerging in liquid chocolate)
06) UNIVERSALITY	16) EXCESSIVE (OR PARTIAL) ACTION	26) COPYING, IMAGING PRINCIPLE (application of optical mapping)	36) PHASE TRANSITION
a) a helmet in use, within field conditions, rendered as: a1) spade a2) frying pan c) sets of universal kitchen robots, mixers, blenders, with operating actuators (rasps, juice extractors, etc.) b) universal "handy-tools" Swiss Army knife	a) in close fit of both piston and cylinder of the engine b) to spray excessively paint, and then to remove the excess of the paint c) to fulfill the fuel tank, and then to remove the excess of fuel	a) use of ultrasounds ultrasound mapping b) magnetic resonance mapping c) X-rays radiography d) in mapping of material structures the application of: - infrared - ultraviolet - basically of optical methods e) use of fluorescence and of scintillation's materials	a) a binary, phase transition cycle for refrigerator construction heat flows from surroundings (red arrows directed to blue heat exchanger) heat carrier, (freon, ammonia, etc.) circulation of an external fluid in heat exchanger
07) EMBEDDED STRUCTURES (nested "Dolls" - Matryoshka)	17) ANOTHER DIMENSION	27) INEXPENSIVE SHORT-LIVED OBJECTS (CHEAP CADUCITY, & OF DISPOSABLE MATERIALS)	37) THERMAL EXPANSION
a) retractable car radio antenna, fishing rods, etc. b) sets of universal kitchen robots, mixers, blenders, with operating actuators (rasps, juice extractors, etc.) c) radiators of ultrasound welders	d) crystallography science of complex symmetries ^{24}Mg a) two colliding tools in 1D should be arranged in 2D plane, and tools colliding in 2D plane, should be rearranged in 3D b) to stack vertically containers, chairs, laptops, etc. c) the use of Lie algebra in atom's structures analysis (nuclei's shells of electrons)	a) kitchen utensils, dishes, cutlery made of plastic b) disposable syringes, gloves, etc. c) plastic bags, packaging wrappers, etc. d) printing head integrated with ink cartridge (formerly, each printer possessed built-in printing head) (presently, each of ink cartridge has its own printing head)	1) thermal shaft fitting temp $< 0^{\circ}\text{C}$ 0°C 2) final state of thermal equilibrium temp $> 0^{\circ}\text{C}$
08) ANTI-WEIGHT (balance preserving)	18) MECHANICAL SELF-INDUCED VIBRATIONS (IN RESONANCE)	28) TO SUBSTITUTE MECHANICAL SYS. WITH ELECTRO-MAGNETIC ONE	38) STRONG OXIDANTS
a) wind turbines (moment of inertia in set of smoothing gusts of wind) b) anti-air screws c) fish bladder (fish submerged in water) d) balloon filled with hot air e) slipping hydrofoils boats f) concept of hoover crafts	a) piezoelectric engine - a conceptual design direction of relative movement of upper disc direction of aerial wave & relative movement in lower disc b) quartz generators, in electric circuits c) piezo-based tightments for set of two discs	a) magnetic field to substitute mech. sys. with: electric field b) magnetic borne pressure of the machined materials c) mobile fields instead of static fields	a) oxygen O_2 b) ozone O_3 c) (indirectly) vapour H_2O in oxidation of metal's surface (iron with over-heated vapour under pressure, at 300°C degree) O_2 with protection layer obtained due to oxydation
09) PRE-ELIMINARY ANTI-ACTION (COUNTER- ACTION)	19) PERIODICAL ACTION, OR PULSED ACTION	29) PNEUMATICS & HYDRAULICS	39) NEUTRAL ATMOSPHERES, INERT ENVIRONMENTS
a) surrounding sounds b) piezoelectric anti-impact system for cutting tool	a) hammer drill b) pulsed laser, against lasers of continuous operational mode c) 'pseudo-analogue' driving (PWM) d) pulse DC power unit, against conventional DC power unit e) pulse amplifiers f) step motors	- pneumatic automobile tyre, pneumatics dampers, automobile airbags, pneumatic "discrete", driving of operational actuators, for instance: in automatic welding of plastic wrapping - automobile brakes, in driving of plane elevator, where the precision of driving is needed, enormous force transition - hydraulics in communicating vessels	a) CO_2 extinguishers b) N_2 or He_2 protection atmospheres in processing, and production c) N_2 or He_2 protection atmospheres in storing of products, and materials both raw and processed d) inert containers for either acidic or basic liquids e) various process inhibitors?
10) PRE-ELIMINARY ACTION	20) CONTINUITY ACTION OF USEFUL ACTION	30) FLEXIBLE FILMS, FOILS, MEMBRANES (common & with osmotic pressure)	40) COMPOSITE MATERIALS
a) parking of hard disc reading/writing heads (when it is needed) b) blowing off the (potentially chocked) nozzles in printing cartridges (operational mode)	a) enlarging drill, operating in both directions b) nozzles of cartridge, printing also in returning direction (without idle mode) c) steam turbines of generators for one power plants, working continuously (in optimal mode), while the others working, as pump-storage power plants, in aim of storing of energy for afternoon hours (mode: pumping of the waters into upper reservoir on mornings, while emptying upper reservoir into lower one on afternoons)	a) not wettable film prohibits evaporation of water b) flattable balloons, domes, barriers c) osmosis phenomenon (membranes, which adapt osmotic pressure)	1) elements of blades, rotors, airscrews in wind turbines constructions; 2) yacht's & catamaran's constructions; 3) elements exposed to ultra-strong, severe stress 

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40			
weight	weight	length	length	surface	surface	volume	volume	velocity	force	stress/pressure	shape	subsys.	stability	resistance	the performed action	durability of action	brightness	consumed energy	consumed energy	power	loss of energy	substance's loss	information	time spans	numbers	reliability	sys. accuracy	products	accuracy	interaction	subsystems	degree of subsystems	facility	operating	repairs	complexity	degree of complexity	automatization	productivity	degree of subsystems	degree of complexity	productivity
01 weight	01 weight	—	15	—	29	—	29	—	02	08	10	10	01	28	05	—	06	19	35	—	12	06	05	10	10	03	28	22	27	35	02	29	26	35	03	28	26	35	01 weight			
02 weight	—	—	—	—	—	10	—	35	—	05	—	08	13	13	26	28	—	02	28	35	—	18	36	02	35	24	11	27	35	03	28	26	35	02 weight								
03 length	length	—	—	—	—	10	—	30	—	35	—	10	29	10	39	02	27	19	19	—	19	15	19	20	10	19	18	22	10	21	22	01	28	10	21	01	28 length					
04 length	length	—	35	—	—	17	—	35	—	01	01	13	39	15	—	01,	03	03	—	—	10	32	08	—	15	18	10	19	02	14	01	17	14	04	28 length							
05 surface	surface	—	14	—	—	14	—	—	—	—	—	17	01	01	01	08	19	—	10	32	08	—	35	02	14	02	15	15	17	01	14	01	17	14	04	28 surface						
06 surface	surface	—	26	—	—	26	—	—	—	—	—	17	01	10	—	02	40	—	02	35	—	—	10	32	08	—	35	02	14	02	15	15	17	01	14	01	17	14	04	28 surface		
07 volume	volume	022	—	01	—	01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	09	06	—	34	10	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	07 volume	
08 volume	volume	—	351	19	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	02	24	07	24	09	—	35	35	—	—	—	—	—	—	—	—	—	—	—	—	08 volume	
09 velocity	velocity	022	—	13	—	29	—	07	—	—	—	—	—	—	—	—	—	—	—	—	13	06	35	26	08	03	28	10	08	—	—	—	—	—	—	—	—	—	—	09 velocity		
10 force	force	080	18	17	28	19	01	15	02	13	—	18	10	35	35	19	—	35	—	19	01	02	35	35	19	—	17	16	05	—	38	15	01	23	10	05	21	09 force				
11 stress / pressure	stress / pressure	36	29	10	01	15	15	35	34	35	35	11	04	33	18	03	—	39	—	24	14	—	35	35	19	—	27	26	05	14	03	10	02	15	01	23	10	05	21 stress / pressure			
12 shape	shape	081	15	29	13	05	—	14	07	35	35	34	—	33	30	14	—	22	13	02	—	10	11	28	10	01	02	35	32	34	15	10	03	10	02	15	01	23 shape				
13 subsystem stability	subsystem stability	029	10	34	14	34	—	04	02	15	10	15	12	01	14	26	—	14	10	09	—	18	40	14	—	18	25	10	01	27	26	05	14	03	10	02	15	01 subsystem stability				
14 resistance	resistance	01	40	01	15	03	09	10	09	08	10	10	10	13	—	27	—	30	35	19	—	10	11	28	10	03	03	27	26	05	14	03	10	02	15	01 resistance						
15 durability of the performed action	durability of the performed action	19	—	02	—	03	—	10	—	03	19	19	14	13	27	—	19	02	28	—	—	39	—	03	26	16	—	35	35	14	—	35	35	14	—	35 durability of the performed action						
16 durability of the performed action	durability of the performed action	—	06	—	01	—	—	—	—	353	—	—	—	—	—	—	39	—	—	—	03	—	16	18	—	—	36	—	40	—	—	—	—	—	—	—	—	16 durability of the performed action				
17 temperature	temperature	36	22	15	15	03	35	34	35	02	35	35	14	01	10	19	19	—	32	32	19	—	17	30	15	—	15	16	04	—	27	26	05	14	03	10	02	15	01 temperature			
18 brightness	brightness	01	35	32	32	16	—	32	—	13	13	19	11	—	30	32	19	—	35	18	01	—	19	06	—	19	01	—	15	16	04	—	27	26	05	14	03	10	02	15	01 brightness	
19 consumed system's energy	consumed system's energy	12	—	12	—	19	—	35	—	08	16	23	12	19	05	28	—	19	02	28	—	10	15	—	03	19	19	—	15	16	04	—	27	26	05	14	03	10	02	15	01 consumed system's energy	
20 consumed system's energy	consumed system's energy	—	19	—	—	—	—	—	—	—	36	—	—	—	27	35	—	—	—	—	04	—	—	—	19	02	28	—	20	—	—	—	—	—	—	—	—	—	—	—	—	20 consumed system's energy

Contradiction Matrix, accordingly to Savransky's book "Engineering of Creativity" (the first left upper quarter of the Matrix)

Contradiction Matrix, according to Savransky's book "Engineering of Creativity" (the third right upper quarter of the Matrix)

the fifth example (defined within Topic's Duties)

Contradiction Matrix, according to Savransky's book "Engineering of Creativity" (the second left bottom quarter of the Matrix)

Contradiction Matrix, according to Savransky's book "Engineering of Creativity" (the forth right bottom quarter of the Matrix)