

Contradiction Breaker: SEGMENTATION (IP 01)

- Divide an object into independent parts.
- Make an object easy to disassemble.
- Increase the degree of fragmentation or segmentation.“ [p. 263]

Source: tetris - Teaching TRIZ at school

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Contradiction Breaker: EXTRACTION (IP 02)

- Extract the “disturbing” part or property from the object.
- Extract only the necessary part or property from an object.“ [p. 263]

Source: tetris - Teaching TRIZ at school

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Contradiction Breaker: LOCAL QUALITY (IP 03)

- Transition from homogenous to heterogeneous structure of an object or outside environment (action).
- Different parts of an object should carry out different functions.
- Each part of an object should be placed under conditions that are most favorable for its operation.“ [p. 263]

Source: tetris - Teaching TRIZ at school

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Contradiction Breaker: ASYMMETRY (IP 04)

- Replace symmetrical form(s) with asymmetrical form(s).
- If an object is already asymmetrical, increase its degree of asymmetry.“ [p. 263]

Source: tetris - Teaching TRIZ at school

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Contradiction Breaker: MERGING (IP 05)

- Consolidate in space homogeneous objects, or objects destined for contiguous operations.
- Consolidate in time homogeneous or contiguous operations.“

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: UNIVERSALITY (IP 06)

- An object can perform several functions; therefore, other elements can be removed“ [p. 263]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: NESTING (IP 07)

- One object is placed inside another. That object is placed inside a third one. And so on ...
- An object passes through a cavity in another object.“ [p. 263]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: COUNTERWEIGHT (IP 08)

- Compensate for the weight of an object by combining it with another object that provides a lifting force.
- Compensate for the weight of an object with aerodynamic or hydrodynamic forces influenced by the outside environment.“ [p. 263]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: DO IT IN REVERSE (IP 13)

- Instead of the direct action dictated by a problem, implement an opposite action (i.e., cooling instead of heating).
- Make the moveable part of an object, or outside environment, stationary – and the stationary part moveable.
- Turn the object “upside down”.“ [p. 264]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: CURVATURE (IP 14)

- Replace linear parts with curved parts, flat surfaces with spherical surfaces, and cube shapes with ball shapes.
- Use rollers, balls, spirals.
- Replace linear motion with rotational motion; utilize centrifugal force.“ [p. 264]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: DYNAMICS (IP 15)

- Characteristics of an object or outside environment, must be altered to provide optimal performance at each stage of an operation.
- If an object is immobile, make it mobile. Make it interchangeable.
- Divide an object into elements capable of changing their position relative to each other.“ [p. 264]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: INTO A NEW DIMENSION (IP 17)

- Transition one-dimensional movement or placement of objects into two-dimensional or three-dimensional, etc.
- Utilize multi-level composition of objects.
- Incline an object, or place it on its side.
- Utilize the opposite side of a given surface.
- Project optical lines onto neighboring areas or onto the reverse side of an object.“ [p. 264]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: FEEDBACK (IP 23)

- Introduce feedback.
- If feedback already exists change it.“ [p. 265]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: MEDIATOR (IP 24)

- Use an intermediary object to transfer or carry out an action.
- Temporarily connect the original object to one that is easily removed.“ [p. 265]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: SELF-SERVICE (IP 25)

- An object must service itself and carry out supplementary and repair operations.
- Make use of waste material and energy.“ [p. 265]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: COPYING (IP 26)

- A simplified and inexpensive copy should be used in place of a fragile original or an object that is inconvenient to operate.
- If visible optical copy is used, replace it with infrared or ultraviolet copies.
- Replace an object (or system of objects) with their optical image. The image can then be reduced or enlarged.“ [p. 265]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: DISPOSE (IP 27)

- Replace an expensive object with a cheap one, compromising other properties (i.e. longevity).“ [p. 265]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: REPLACEMENT OF MECHANICAL SYSTEM (IP 28)

- Replace a mechanical system with an optical, acoustical, thermal or olfactory system.
- Use an electric, magnetic and electromagnetic field to interact with an object.
- Replace fields that are:
 - Stationary with mobile
 - Fixed with changing in time
 - Random with structured
 - Use fields in conjunction with ferromagnetic particles.“ [p. 265]

Source: tetris – Teaching TRIZ at school

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Contradiction Breaker: CHANGING THE COLOR (COLOR CHANGES) (IP 32)

- Change the color of an object or its environment.
- Change the degree of translucency of an object or its environment.
- Use color additives to observe an object or process which is difficult to see.
- If such additives are already used, employ luminescent traces or trace atoms.“ [p. 266]

Source: tetris – Teaching TRIZ at school

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