Illusions in thinking || Typical thinking errors

Making wrong conclusions which are repeated by others and are not caused by the complexity of judgment required by such a conclusion or difficulties in guessing.

Thinking is distorted by the following: Perception, imagination or what is seen as opposed to logic, associations, feelings (most important among them are caused by personal biases), **egocentricity** in general; judging a concept by associations with the concept prototype rather than logic.

Example of the distortion of thinking by perception [J. Piaget]: 5-6 year old children are shown two glass vessels with milk – A and B, and are asked which one contains more milk. The children answer that they are the same (equal, no difference).



After that, the milk from B vessel is poured, in front of the children, into another, narrow and tall vessel C. Now the children are asked which vessel contains more milk – A or C. Almost all the children say that C contains more.

Thinking 'knows' that by taking liquid from a vessel and pouring it into another vessel its amount does not change, but perception is against this. Something 'taller' is so important and striking for the child that it is very difficult to equalize it with something short.

Liquid is something that is indiscrete. The same illusion is observed with discrete material. Children aged 5-6 (as well as 7 - 8 year old poorly educated children) think that the number of objects is bigger when a group of objects is widely spread around.



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For example, it seems to the child that there are more snowflakes in the right group than in the left. If density is taken into consideration, than the left group seems to contain more snowflakes.



But the thing is that both area and density are the characteristics of space rather than number. Therefore, the child sees the space and assesses the number according to one of the most striking characteristics of the space. The child cannot shift to other qualities because of inability to decentrate. For this reason the child has no awareness of the invariability (unchangeability) of

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number, i.e. real number. At the same time, it does not often help if the grouped objects are spread in front of the child or are counted to make sure that there are 10 objects in each groups. Note that at this age children seem to 'know' how to carry out addition or subtraction below one hundred. The above example clearly shows how strong immediate impressions are (e.g. impressions of the emotional character) and that they are more powerful than mediated conclusion. "The child has the heart on its tongue and mind in its eye" - Svanetian proverb says. But the thing is that the same is true for most adults. This can be demonstrated by a strong influence of ads, shows and stereotypes on the majority of society.

It's caused by what is desirable, i.e. thinking is strongly distorted by desires, emotions, set phenomena including linguistic [see language and thinking] and non-linguistic social and ethnocultural influences and conformity. If the situation is complex, even the teachers with high education can be under such influences. They might easily draw conclusions from simple logical syllogisms the content of which is interrelationship between animals and plants, but if the content is changed in the same type of syllogism (i.e. minor changes introduced are unimportant in terms of logic) and animals and plants are replaced with Georgian - Abkhaz relationships or the relationship between the Orthodox and Jehova's Witnesses, they become unable to draw the right conclusion [S. Nadirashvili, T. Abashidze]. Here is a bit different, but interesting example of judgment: 'National diversity is a treasury of mankind. How numerous the nation is does not matter. Every nation is equally valuable. Therefore, the unique character of each nation should be preserved and every nation should enjoy the right to self-determination - to choose one's own way, arrangement of the state, independence or joining some other state." The appropriate conclusion that can be drawn from this judgment applies to the Georgian nation (by the way, such a conclusion sounds completely logical for our people) as well as to the Abkhaz nation. However, the latter sounds less logical for our people; it seems to be debatable and unjustified as the content of the conclusion is unacceptable. An analogous example would be the following: A person easily solves an arithmetical problem (there are 10 apples on one plate, and two more apples on the other), but is unable to solve the same problem if the apples are replaced with rats [see Basic regularity of the development of thinking].

Important kinds of thinking illusion are causal attribution, typical mistakes in economic judgments [Tversky, Kahneman], **statistical judgments** [Tversky, Kahneman] and **ethical judgments**. The common ground for all these errors is the **assimilation effect of the set**

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underlying thinking which is not followed by contrast illusion or objectification that would fix it [see also typical mistakes in aesthetic thinking]. These are not followed by contrast or objectification because it is difficult for the person to become aware of inconsistency, which is usually abstract and difficult to realize. The person becomes aware of concrete, striking, but less important contents, instead. But if you try to help them realize the inconsistency or cause the interruption of thinking and stimulate objectification, this will rarely help fix thinking illusions. It more often results in **rationalization** rather than objectification and awareness. This first of all points to a strong rigidity of the cluster of fixed social sets, its static character (the latter qualities are opposite to the qualities characteristic of **talent**). It is much easer to insert, sometimes forcefully, a new unusual fact into the existing model (assimilation) then to revise the model because of that fact (accommodation). But when accommodation becomes necessary, most people try to make revision as limited as possible, in terms of both depth and breadth [Tversky, Kahneman]. Another reason is egocentricity; people more easily and with more pleasure remember the facts supporting their own point of view than the facts contradicting their opinions (such facts are ignored and forgotten). Also, many unclear facts are seen, associatively, as supporting their point of view.

The general and main reason for illusions of thinking is infantile mindset; in particular, **infantile rigidity of the sets underlying thinking**: Egocentricity and a strong power of the imaginary and associations over the person are two main characteristics of the child's thinking.