

Anna BŁACH, Anita PAWLAK

Silesian Technical University,
The Centre of Geometry and Engineering Graphics,
ul. Krzywoustego 7 44-100 Gliwice
tel./ fax: 0-32 237 26 58,
e-mail: anna.blach@polsl.pl, anita.pawlak@polsl.pl

OPTIMIZATION OF ASSUMPTIONS CHOICE FOR DESCRIPTIVE GEOMETRY TASKS

Computer techniques give ever bigger possibilities of improvements in the area of didactics. As an example Cabri II Plus program can be given, which offers possibilities of assumption modification and task solutions from descriptive geometry.

While starting working on a descriptive geometry task various aspects should be taken into consideration: meritoric contents of a task, how to adapt it to current level of knowledge of a potential user, application of basic market principles, final aesthetics of a drawing. Having determined meritoric contents of a task it should be adapted to the abilities of person who will solve it.

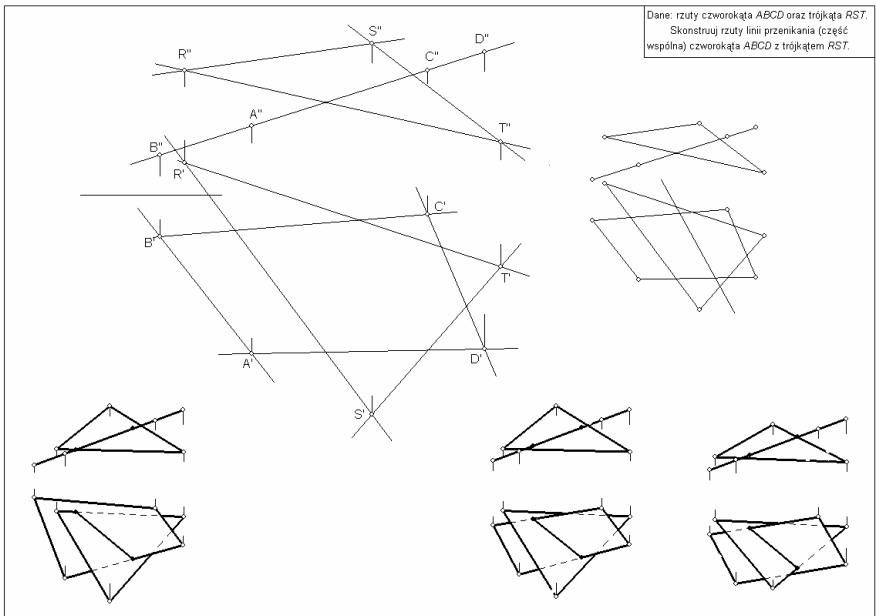
Usually, the most difficult level occurs when accepting assumptions of any point of the surface and lines towards the plane. Acceptance of given elements in specific location usually facilitates solution of a task. When accepting assumptions we should avoid such location of elements which can cause less exactness in solving the task. It refers to acceptance of segment or line projection in 'acute' locations i.e. with very small angles towards referential line. Moreover, very small polygons, circles, ellipses etc. or very acute angles between element should also be prevented.

Hence, it seems very useful to be able to make changes in task assumptions with simultaneous control over final effect. The authors tried to test possibilities of solution shaping with changes in assumptions in real time.

For the accepted assumptions, solution of an example in smaller scale (1:2) has been generated. In the assumptions separate color shows movable elements, when we change their location (without changing meritoric content of a task) it automatically changes solution drawing. Changing assumptions can cause remarkable change in projection visibility. Then, visibility is not determined in such solutions but the most common cases are shown. In order to exemplify the above issue Cabri II Plus program has been used, where a possibility of automatic shaping of task solution with a change in assumptions has been achieved. This elaboration can be useful for teachers while choosing alternative assumptions or for people analyzing changes in task solutions (students or people giving presentations). Tasks have been prepared so that they fit A3 format. The contents have been placed in right upper corner

of a sheet. When changing movable elements of assumptions, change in solved task is done automatically (in much smaller scale). There are no possibilities of changing assumptions to be seen. Therefore, additionally a few versions of task solutions including visibility have been shown.

The paper has presented as an example a task concerning determination of common part of two flat polygons where one is perpendicular to the plane.



References

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