

**brand security systems**

**Designer**<sup>®</sup>

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powered by 

Study lessons

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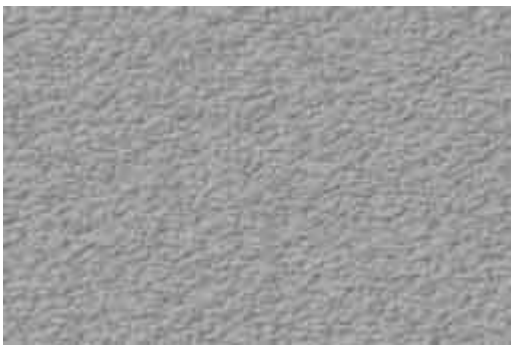
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# Study lessons

## Lesson 1

Let's create an example of a simple background with the latent pattern which can be printed on the usual laser printer supporting the resolution 600 dpi.

1. Start the program BSS Designer®.
2. Specify a location of the screened image. Leave the resolution unchanged.
3. Do not specify the image "B", it will not be used.
4. Specify a location of the image "C". Choose the position "Multiply". Do not specify blurring.



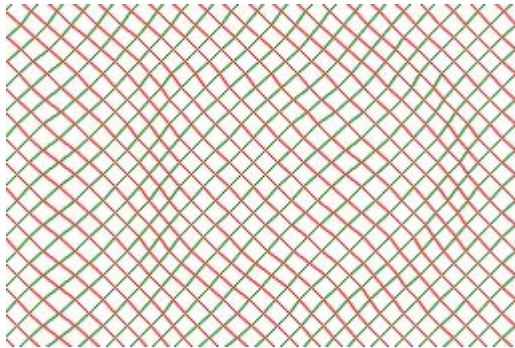
Screened image



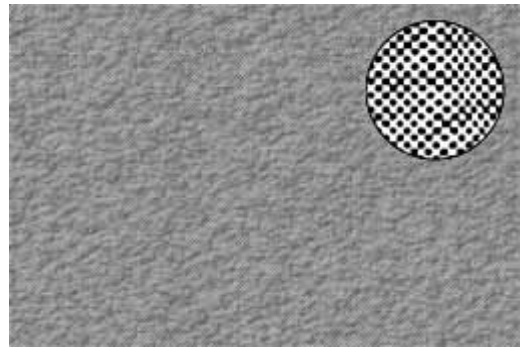
Additional image "C"

5. Pass to the menu "Parameters".
6. Establish the value of ruling 60 lpi.
7. Establish the value of the resolution 600 dpi.
8. Establish the angle of screening 45 degrees.
9. As the required dot gain compensation is not known, set the value 1.00.
10. In the menu "Dot Shape Modification" choose a mode "One Value". The raster is "Round".
11. In the menu "Deformation of Structure" choose a mode "Based on the Image C".

12. Set horizontal displacement – 0.75, vertical - 0.
13. Use an option "Blur Autoselect".
14. Pass to the menu "Generation".
15. Generate a map of a raster.
16. Generate the structure of a raster.
17. Specify the name and a location of a generated file.
18. Generate the screened image.



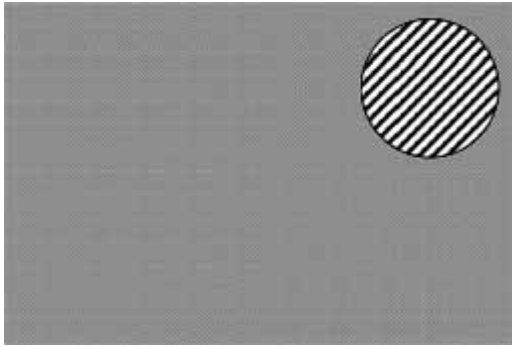
Fragment of geometrical structure



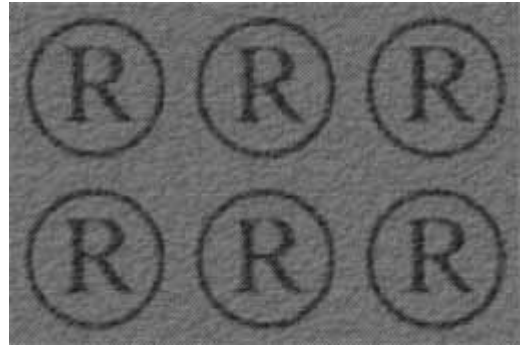
Generated raster

19. Save the parameters of the project in order to use them afterwards.
20. Set 40 % filling of a verifying grid.
21. Set the angle of a verifying grid 45 degrees.
22. Choose a mode "No Deformation ".
23. Specify a location and the name for a file of a verifying film.
24. Generate a verifying film.
25. Open the generated files or import them in any graphic editor.
26. Not changing the size and proportions of images, print the image of a background on the white paper, and a verifying film on the transparent tracing-paper.

27. Apply the tracing-paper on the image and check up the display of the latent pattern.



Verifying film



Display of the latent pattern

28. If you have become confused in the menu of program BSS Designer<sup>®</sup>, load a file of the project lesson\_1.mtj and verify your installations.

The list of applied files:

- A.tif - the basic screened image
- C.tif - the additional image "C"
- Out.tif - the generated raster of the basic image
- Net.tif - a file of a verifying film
- Lesson1.mtj - a file of the project with the saved installations
- Lesson1.html - a file of the present description

## Lesson 2

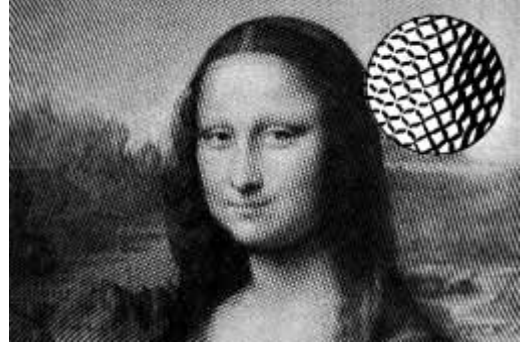
Let's create an example of a simple background with the use of decorative kinds of a raster, the change of structure of which is defined by the mathematical formula. The example is printed out on the usual laser printer supporting the resolution 600 dpi.

1. Start the program BSS Designer<sup>®</sup>.
2. Specify a location of the screened image. Leave the resolution unchanged.
3. Do not specify the image "B", it will not be used.
4. Do not specify the image "C", it will not be used.
5. Pass to the menu "Parameters".
6. Set the value of ruling 30 lpi.
7. Establish the value of the resolution 600 dpi.
8. Establish the angle of screening 0 degrees.
9. As the required dot gain compensation is not known, set the value 1.00.
10. In the menu "Dot Shape Modification" choose a mode "Based on the formula".
11. Set the formula for  $S = (A - 0.5) * 2$ . Rasters: "Double line" - "Rhombus" - "Double Bar".
12. In the menu "Deformation of Structure" choose a mode "Based on the formula".
13. Set the formula for  $dX = \cos(h * 3.14) * dpi / 2$ , for  $dY = -\cos(l * 3.14) * dpi / 2$ , the multiplication factor 1.00.
14. Pass to the menu "Generation".
15. Generate a map of a raster.
16. Generate the structure of a raster.
17. Specify the name and a location of a generated file.

18. Generate the screened image.



Screened image



Generated raster

19. Save the parameters of the project in order to use them afterwards.

20. Set 40 % filling of a verifying grid.

21. Set 0 degree angle of a verifying grid.

22. Choose a mode "Save Deformation".

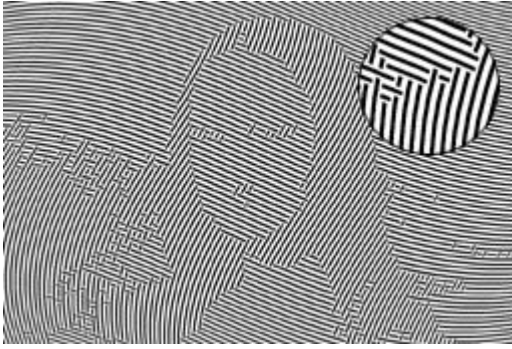
23. Specify a location and the name for a file of a verifying film.

24. Generate a verifying film.

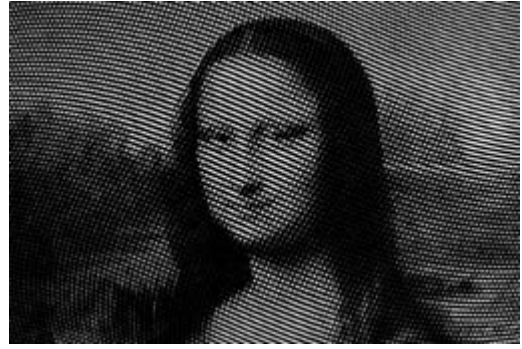
25. Open the generated files or import them in any graphic editor.

26. Not changing the size and proportions of images, print the image of a background on the white paper, and a verifying film on the transparent tracing-paper. For printing use the laser printer in a mode 600 or 1200 dpi.

27. Apply the tracing-paper on the image and check up conformity of geometrical structures of a pattern.



Verifying film



Application of a film on the image

28. If you have become confused in the menu of program BSS Designer<sup>®</sup>, load a file of the project lesson\_2.mtj and verify your installations.

The list of applied files:

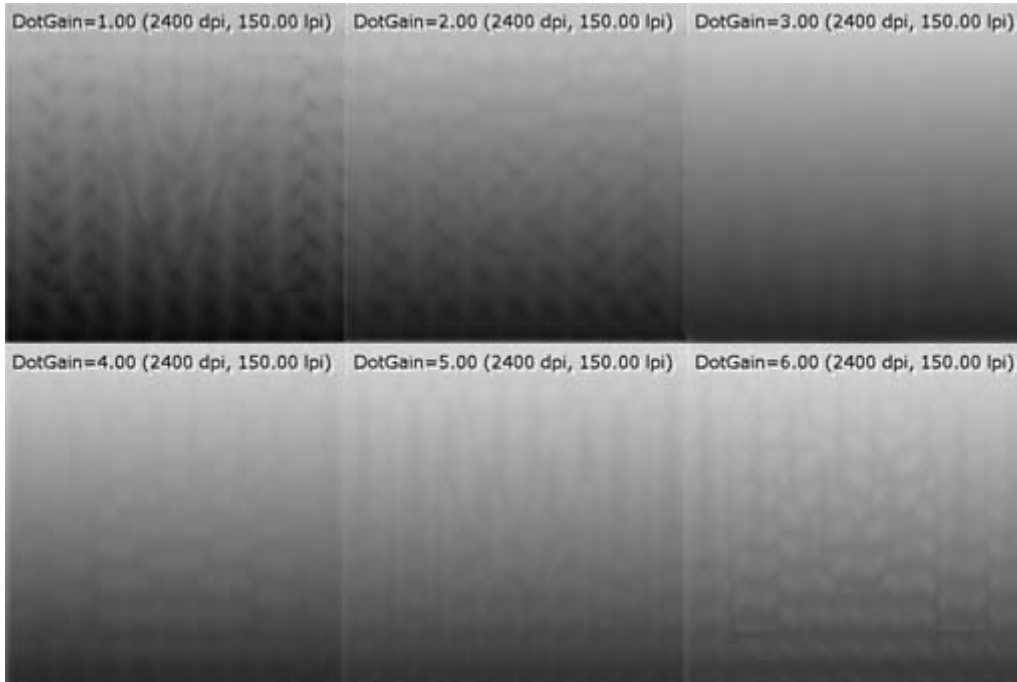
- A.tif - the basic screened image
- Out.tif - the generated raster of the basic image
- Net.tif - a file of a verifying film
- Lesson2.mtj - a file of the project with the kept installations
- Lesson2.html - a file of the present description



### **Lesson 3**

Let's define the value required for dot gain compensation at printing.

1. Start the program BSS Designer®.
2. Pass to the menu "Parameters".
3. Set the value of ruling 150 lpi.
4. Set the value of the resolution 2400 dpi.
5. Set the angle of screening 45 degrees.
6. Pass to the menu "Generation".
7. In the menu "Dot Gain Test" set the initial value 1.0, a step 1.0, and the final value 6.0.
8. Generate the tests.
9. Import the generated files into any graphic editor and arrange them on one sheet. The imported images cannot be compressed or dragged out.
10. Generate a print-file for production of a photopositive or a typographic plate. At generation it is impossible to use an option of automatic reduction of the resolution of images.
11. Print the tests by the offset machine, using different grades of paper. Watch the observance of all technological processes.



Printed tests for determination of required dot gain compensation

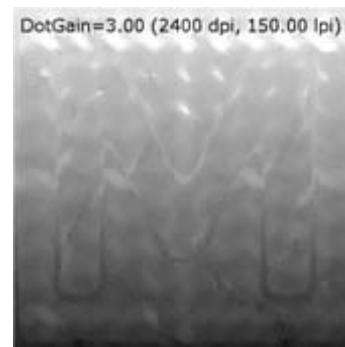
12. Note the positions with the smoothest background on the printed samples. The stains and the letter "M" should not be appreciable.

13. In further work use the values of dot gain compensation specified on the marked positions.

14. Repeat the tests if there were any changes in the production chain (change of the equipment or materials).



Correctly chosen value of compensation



Badly adjusted manufacturing technology

- The function "Dot Gain Compensation" cannot compensate for the light-shortening of the fine halftone dots, therefore it is necessary to watch for the gauging of the exposing and developing machines. Do not use too high values of ruling LPI and typographic plates of poor quality.
- The deviation from the required value of compensation will not be as appreciable at usual works as on the printed tests.
- In offset printing the quality of the image depends on the gauging of the device for the production of photopositives or plates (thus the established linearization has no value, it is desirable that the device being used would demand minimal linearization), on the type of materials used (we recommend a film of Hard Dot class and high-quality typographic plates), on the adjustment and technical condition of a press (ink feed, tightness of cylinders, humidifying, replacement of wearing elements).

## Lesson 4

Let's create an example of full-color images for offset printing.

For the given example we will prepare three images:

The image "A" - the basic image in color format CMYK, in the right bottom corner of which the microtext is located;



Screened image



Microtext on the image

The image "B" will determine the change of the kinds of a raster in the final composition;

The image "C" is for introduction of geometrical distortions into the structure of a raster.



Additional image "B"



Additional image "C"

1. Start the program BSS Designer®.
2. Specify a location of the screened image. Leave the resolution unchanged.

3. Specify a location of the image "B". Choose the position "Stretch". Blurring - 2.
4. Specify a location of the image "C". Choose the position "Stretch". Do not specify blurring.
5. Pass to the menu "Parameters".
6. Set the value of ruling 133 lpi.
7. Set the value of the resolution 2400 dpi.
8. Set the angles of screening "Shades of Green".
9. Dot gain compensation- 3.00.
10. In the menu "Dot Shape Modification" choose a mode "Based on the Image B". Rasters: "Bar" - "Round" - "Line".
11. In the menu "Deformation of Structure" choose a mode "Based on the Image C".
12. Set horizontal displacement 1.00, vertical - 0.50.
13. Use an option "Blur Autoselect".
14. Pass to the menu "Generation".
15. Generate a map of a raster.
16. Generate the structure of a raster.
17. Specify the name and a location of the screened files.
18. Generate the screened image.
19. Set 40 % filling of a verifying grid.
20. The deformation of structure of a raster is carried out on a background of the sky with the average value of color: Cyan-100, Magenta-50, Yellow-0, Black-0 %, therefore set the angle of a verifying grid of 75 degrees, appropriate to the color Magenta.
21. Choose a mode "No Deformation".
22. Specify a location and the name for a file of a verifying film.

23. Generate a verifying film.
24. Save the parameters of the project in order to use them afterwards.
25. Import four generated files of rasters for the color image into the graphic editor (Corel Draw, Adobe Illustrator, Macromedia Freehand, Quark X-press, Adobe Pagemaker or another).
26. For a raster Cyan set the filling 100 % cyan, a white background, and position it under the rasters Magenta, Yellow, Black.
27. For the rasters Magenta, Yellow, Black set an appropriate 100 % filling with an option "Overprint" and a transparent background.
28. Align four images in relation to each other and group them.
29. Not changing the proportions position the created composition in the necessary place of a layout.
30. Generate a print-file for offset printing. Print the production.
31. Produce a verifying film on a separate photopositive.
32. Check up the display of the latent pattern on the printed sample at the application of a verifying film.



Printed image



Display of the latent pattern at the application of a verifying film

33. If you have become confused in the menu of program BSS Designer<sup>®</sup>, load a file of the project lesson\_4.mtj and verify your installations.

- The values dpi and of dot gain compensation defined in the example may not suit your conditions of printing.

The list of applied files:

- A.tif - the basic screened image
- B.tif - the additional image "B"
- C.tif - the additional image "C"
- Out-C.tif - the generated raster for color Cyan
- Out-M.tif - the generated raster for color Magenta
- Out-Y.tif - the generated raster for color Yellow
- Out-B.tif - the generated raster for color Black
- Net.tif - a file of a verifying film
- Lesson4.mtj - a file of the project with the saved installations
- Lesson4.html - a file of the present description

## Lesson 5

Let's create an example of the monophonic image for offset printing with two latent images.  
For the given example we will prepare three images:

The image "A" - the basic image in color format Grayscale;



Screened image

The images "B" and "C" will determine geometrical distortions in the structure of a raster



Additional image "B"



Additional image "C"

1. Start the program BSS Designer®.
2. Specify a location of the screened image. Leave the resolution unchanged.
3. Specify a location of the image "B". Choose the position "Stretch". Blurring - 1.
4. Specify a location of the image "C". Choose the position "Stretch". Blurring - 1.



5. Pass to the menu "Parameters".
6. Set the value of ruling 133 LPI.
7. Set the value of the resolution 2400 DPI.
8. Set the angle of screening 45 degrees (at this value it will be possible not only to turn a verifying film through 90 degrees for display of the second latent image, but also just to turn it to the other side).
9. Dot gain compensation - 3.00.
10. In the menu "Dot Shape Modification" choose a mode "One Value". A raster - "Round" (for transfer of two latent images other kinds of rasters are not suitable).
11. In the menu "Deformation of Structure" choose a mode "Base on the formula".
12. Set the formula for  $dX = B+C$ , for  $dY = B-C$ , the multiplication factor 6.00. (the mark "+" or "-" in the mathematical formula before a variable of the additional image sets a direction of displacement, for the second image the direction should be perpendicular in relation to the first additional image and to an angle of screening. The value of multiplication factor is connected to the relation  $DPI/LPI$ , and for the angle of screening 45 degrees it is calculated by the formula  $DPI/LPI/3$ )
13. Do not use an option "Blur Autoselect".
14. Pass to the menu "Generate".
15. Generate a map of a raster.
16. Generate the structure of a raster.
17. Specify the name and a location of the generated files.
18. Generate the screened image.
19. Set 50 % filling of a verifying grid.
20. Set the angle of a verifying grid of 45 degrees.
21. Choose a mode "No Deformation".

- 22. Specify a location and the name for a file of a verifying film.
- 23. Generate a verifying film.
- 24. Save the parameters of the project in order to use them afterwards.
- 25. Open the generated files or import them into any graphic editor.
- 26. Generate a print-file for offset printing. Print the image using orange inks.



Printed image

- 27. Produce a verifying film on a separate photopositive.
- 28. Check up the display of the latent images on the printed sample at the application of a verifying film by the obverse and reverse side.



Display of the latent pattern at the application of a verifying film

Display of the latent pattern at the application of a verifying film by the reverse side

- 29. If you have become confused in the menu of program BSS Designer<sup>®</sup>, load a file of the project lesson\_5.mtj and verify your installations.

- The values DPI and of dot gain compensation defined in the example may not suit your conditions of printing.

The list of applied files:

- A.tif - the basic screened image
- B.tif - the additional image "B"
- C.tif - the additional image "C"
- Out.tif - the generated raster of the basic image
- Net.tif - a file of a verifying film
- Lesson5.mtj - a file of the project with the saved installations
- Lesson5.html - a file of the present description