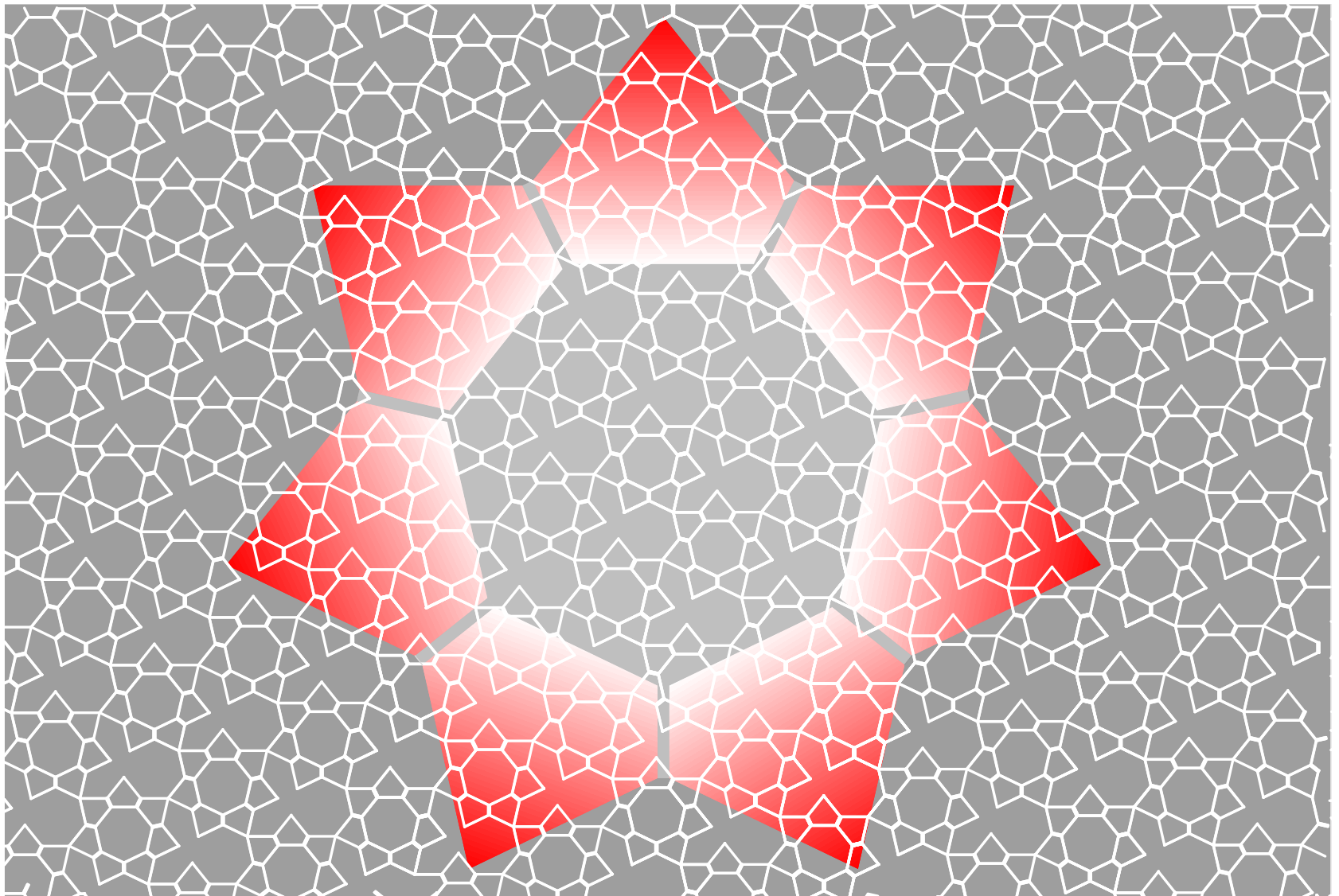
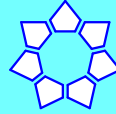




• Interface design for Geometria2 •

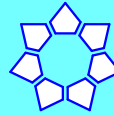




The following pages showcase drawings created by Janos, discussed, revised, and encoded by Louis starting in 2019. Their collaboration and enthusiasm were inspiring. The initial drawings were made using Geometria1, the first version of this software, finished in 1989. By 2020, Geometria2 would be advanced enough to depict detailed interface proposals.

From the very beginning, we agreed to maintain the simplicity of the old program and the “drafting table” analogy in the interface. We reviewed several graphic software programs available and found many with over fifty different tools. We stuck with our original nine tools, arguing that they proved sufficient to perform just as well as other programs with a larger toolbox.

To achieve this, we sacrificed some speed. An example is provided on the next page. It demonstrates that a well-designed tool, combined with the user’s basic knowledge of middle-school geometry, can be very successful. If the user’s memory doesn’t need to remember fifty tools, they are free to use their imagination. A few seconds of delay here and there makes this trade-off worthwhile.



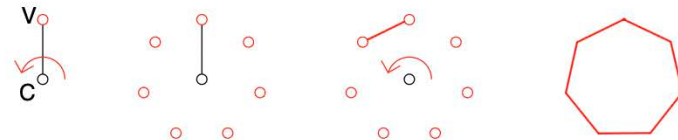
The Ten Commandments: the Interface Design for a graphic, design software

1. Provide functions that offer more creative options than the basic ones.
2. Keep the main window simple, straightforward, and tidy.
3. Only display the tools and options currently needed.
4. All actions should give both sound and visual feedback.
5. Tools, options, and menu items should organise the User Guide.
6. Apply consistent graphic design to all windows, dialogues, and displays.
7. Ease of use should take priority over the simplicity of the algorithm.
8. Use graphic instructions instead of text-based ones.
9. A new version should maintain the design principles of the original.
10. The drafting table metaphor should inspire the interface.

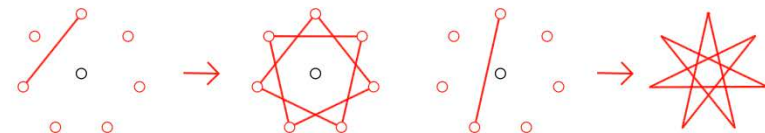
These “Commandments” are not arbitrary. They are based on decades of experience in teaching and research in geometry, practicing engineering, and software development. The commandments need a more detailed explanation; we chose to provide it only for the first one to save space. We use the graphic function of a regular polygon as an example. In most CAD programs, the user chooses two vertices of an edge and the number of edges. The results will appear very quickly:



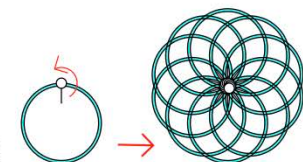
Now, let us look at how Geometria2 draws a regular polygon. The example is the regular heptagon. The user chooses two points: one is the center of the circumscribed circle (C), the other is one of the vertices (V). V is rotated around C seven times by equal angles in a single operation. Then, an edge is drawn between adjacent vertices and also rotated ($n=7$)



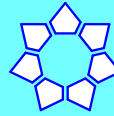
We use the more general “rosace” function instead of the polygon function, and it took us four seconds longer. Any advantage?



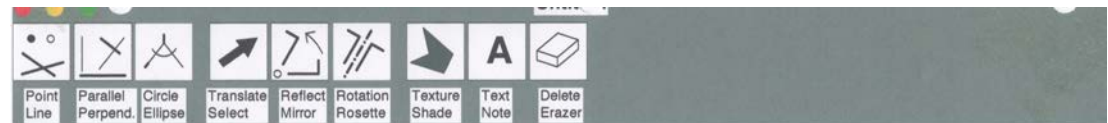
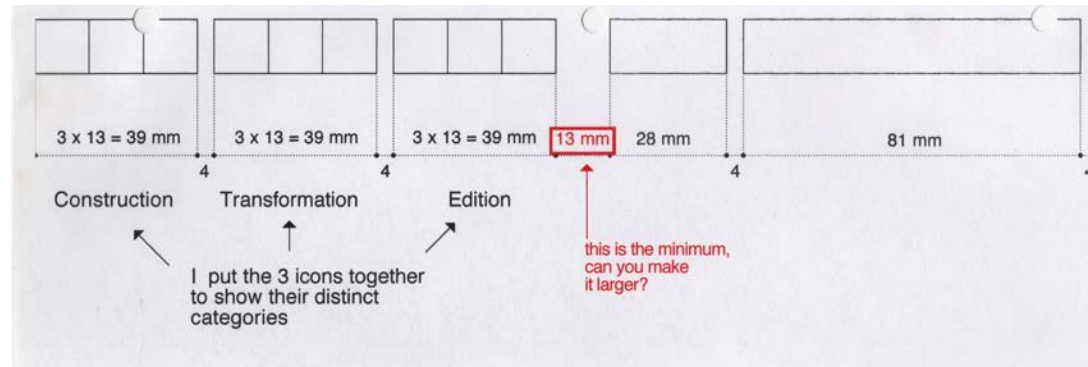
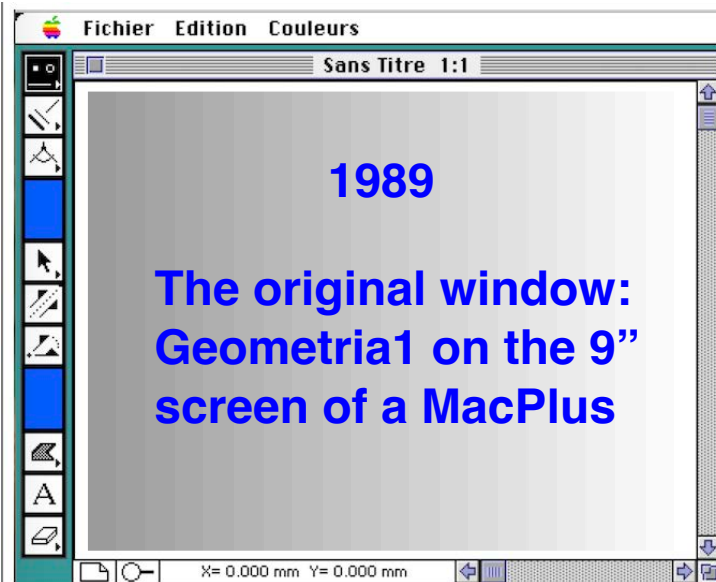
Yes! We use the **same tool** to draw the two other regular (concave) heptagons ($n=7$) and also the rosace shown on the right ($n=10$). Imagination versus speed!



We aim for creativity, not automation!



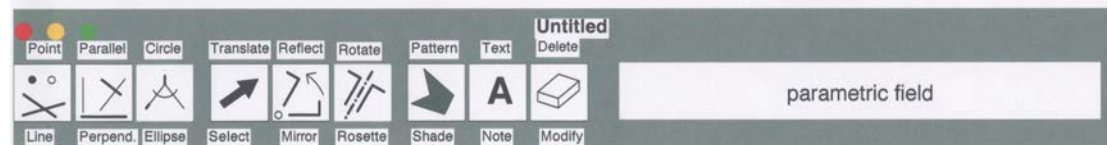
2019.11.12



1. The two upper corners of the gray field should be rounded
2. The four corners of the square and rect. icons should be rounded
3. The minimal size of the main window is the 13" powerbook screen

The basic innovation:

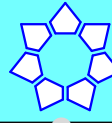
When you click any of 9 icons, the parametric field specific to this icon (see dwg. #2) will appear. You will see only the options related to the icon selected.



Revisions of Geometria 2019.11.12

Janos

1. When you switch tool, the previous tool should return to the default position.
2. Improve the double click action on an icon.
3. Circle through 3 points: the blue node between the two blue dots.
4. When the help window is open, the drafting window should have a horizontal scroll bar.
5. Change the cursor for Free Hand Lines (⌘ above the cursor-pencil)
6. Review the default tools sizes (C/E tool)
7. The Parametric Window is left justified for big screens.



2019.11

C

- Point Line**
 →

point x		length	
y		angle	

 press Command to draw freehand line
- Parallel Perpend.**
 →

point x		length	
y		angle	alpha

 press Command to display multiples of 15 degree
- Circle Ellipse**
 →

r		a	
---	--	---	--

 press Command, click ellipse to show parallelogram

T

- Translate Select**
 →

no copy	with copy	distance	
		angle	
		# copies	

 press Command, drag point to extend, rotate line
- Rotate C Rosette**
 →

center x		y	
angle	a		

 press Command, drag figure to rotate manually
- Reflect D Rosette**
 →

origin x		y	
angle	a		

 press Command to draw a pattern (P6m)

A

- Pattern Shade**
 →

fill	
border	
- Text Note**
 →

font	size	style	justified
helvetica	12	regular	left
- Delete Modify**
 →

modify segment	hide segments	delete segments	replace segments
----------------	---------------	-----------------	------------------

2019.12

Old "Attributes" dialogues

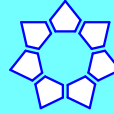
- Point Line**
 →
- Parallel Perpend.**
 →
- Circle Ellipse**
 →
- Translate Select**
 →

New "Attributes" dialogues

- Point Line**
 →
- Point Line**
 →

click button to show colour palette

click a colour to select, default palette returns, showing the selected colour



2020.10.21

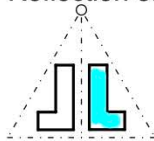
1. The motive



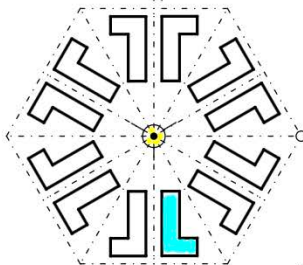
2. Size, orientation, and location of the triangle



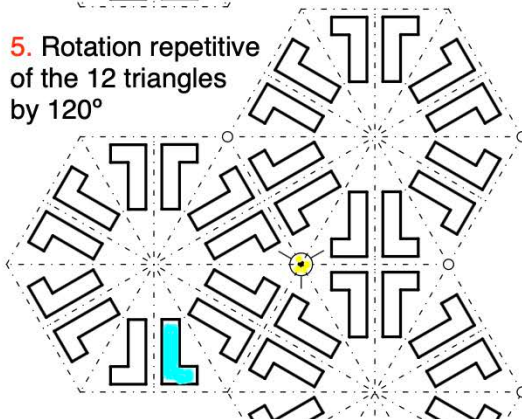
3. Reflection of the triangle (manually)



4. Rotation of the pair of triangles by 60°



5. Rotation repetitive of the 12 triangles by 120°

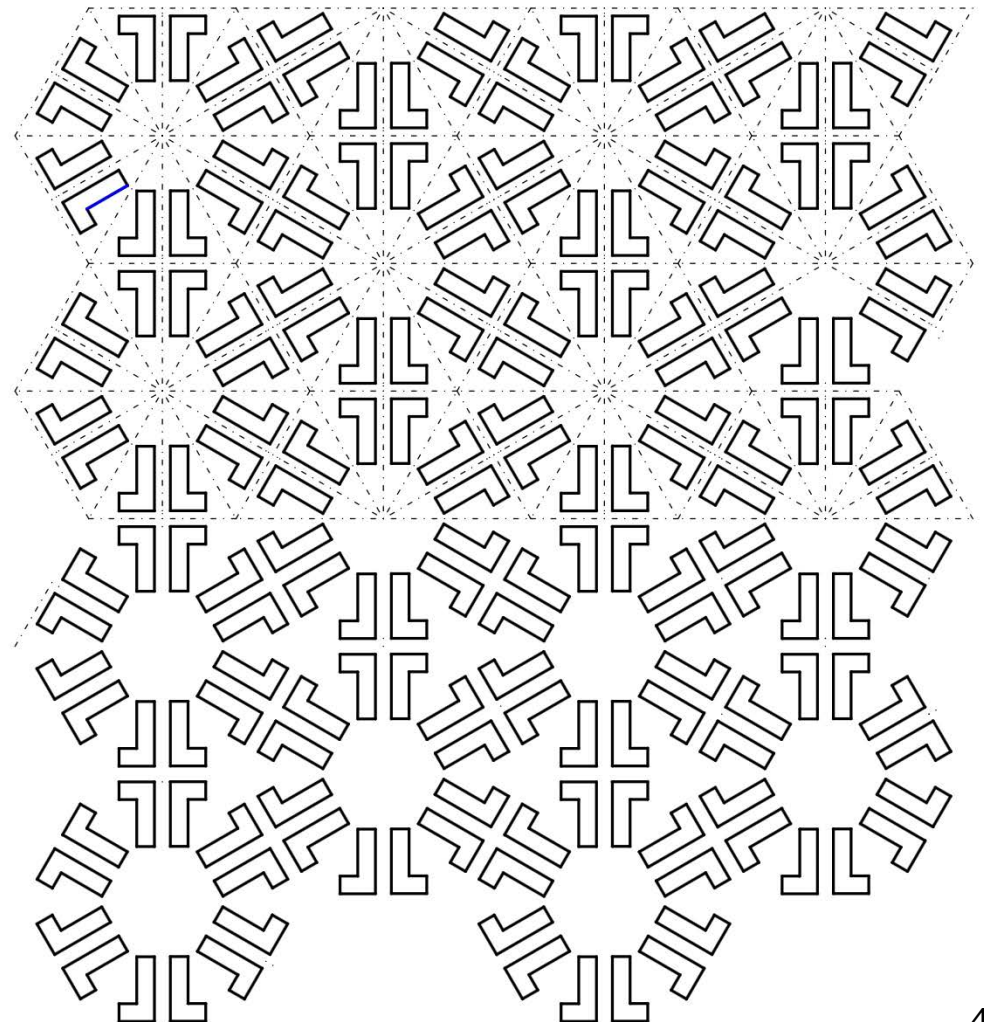


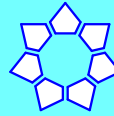
The manual construction of P6m

The dotted lines indicating the axes of reflection are necessary for the manual construction, but they will not appear in Geometria.

If the motive (L) intersects with the mirrors, it will intersect with themselves everywhere in the mosaic.

In this construction, two or more motives coincide!





2020.10.21



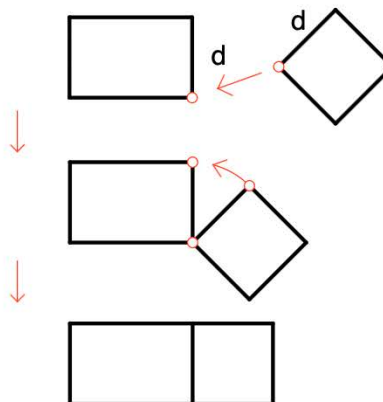
Rotate
C. Rosette



Rotate

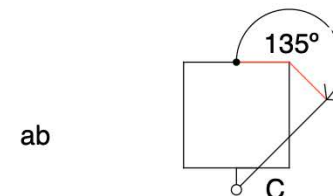
1. All operations of rotation start with selecting the motive.
2. Default values in the Option Bar: "no copy", x and y are empty, the angle is 90°
3. If you press and drag the cursor, the selected motive (greyed out) will rotate live about the moving cursor until you release the mouse. The completed motion is a 90° rotation (default) about the last location of the cursor.
4. During the motion, the centre (x, y) is monitored in the Option Bar.
5. If you fill in the values (x, y, α) and click the check box, the selected motive is rotated.
6. If you only select α (x and y are empty), the check box is dimmed, click at the chosen centre to rotate.
7. Click the "with copy" button if you want to maintain the motive in its original location.

8. Press Command to rotate the motive manually: select the motive, press ⌘, click at the centre, press and drag a point on the motive to rotate. A point maybe a dot, a node or an intersection.
9. During manual rotation, the values (x, y, α) are monitored in the Option Bar.
10. The point selected in manual rotation will snap on any existing points, if the distance of the selected point from the enter is equal to the distance of the existing point to the centre. This feature allows the following operation:

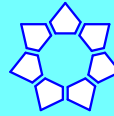


Cyclic rosette

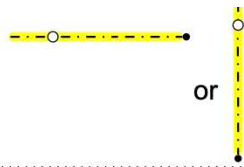
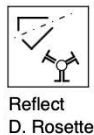
11. A cyclic rosette of order "n" is a motive rotated n times, with an angle of $360^\circ/n$. The n-th copy is the original motive.
12. Select a motive, choose "n", a positive integer, >1 . Click the button in the Attribute bar, and a new cursor appears.
13. The Option bar is greyed out.
14. Press and drag the cursor, the selected motive turns into a moving, greyed-out rosette until you release the mouse.
15. Or, click the location of the center, the rosette will appear.
16. If you change the tool. and return to the The R/CR tool displays the default Option Bar. The n-field in the Attribute bar is empty.
17. Test the precision by rotating a square with $n=8$ about the point C:



The result is the graph of the hypercube!



2021.03.23



Reflect

1. Default values in the Option Bar: "no copy"; x and y are empty, the angle is 0°
2. The default position of the Reflect tool is horizontal. By clicking the icon of the tool, it toggles between horizontal and vertical.
3. Press to locate the origin of the axis (black node with yellow paint), drag the cursor; the selected motive (greyed out) will reflect live about the rotating axis. When you release at a second point (black dot with yellow paint), the axis is located and the reflection is completed.
4. During the motion, the origin and the angle (x, y, α) are monitored in the Option Bar.
5. If you fill in the values (x, y, α) and click the check box, the selected motive is rotated accordingly.
6. You may select only the angle; the check box is dimmed. Click at the centre to rotate at the chosen angle.
7. Click "with copy" to keep the motive.



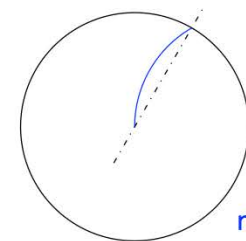
Mosaic

8. The Reflect tool allows you to construct one of the 17 possible mosaics (Pm6, the most interesting). Press $\mathbb{R}$ the Mosaic tool will be displayed in its default position. It is a half-equilateral triangle, all three sides are mirrors.
9. Select a motive, click the Reflect tool, press $\mathbb{R}$ and place the origin (near the motive). Drag the cursor in any direction, you will see the triangle changing size and orientation, at the same time, you see the mosaic mutating in real time. Release the mouse, and the mosaic is now frozen. The triangle is called the unit cell of the mosaic.
10. The user will discover while dragging the cursor, the interaction between the triangle and the mosaic.
11. The parameters in the Option bar are greyed out.
12. To avoid confusion, the text under the Reflect Option Bar should be revised: the word "pattern" should read "mosaic" (see next tool: Pattern/Shade).

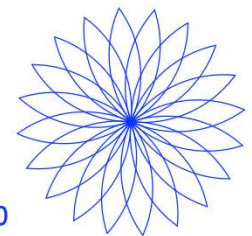


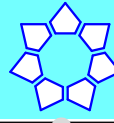
Dihedral rosette

13. A dihedral rosette of order "n" is a motive reflected and rotated n times, with an angle of $360^\circ/n$. The n-th copy is the original motive.
14. Select a motive, choose "n", a positive integer, >1 . Click the button in the Attribute bar, and a new cursor appears.
15. The Option bar is greyed out.
16. Press and drag the cursor, the selected motive turns into a moving, greyed out rosette until you release the mouse.
17. Or, click the location of the centre, the rosette will appear.
18. If you change the tool. and return to the The R/CR tool displays the default Option Bar. The n-field in the Attribute bar is empty.
19. The term "rosette" should be corrected to "rosette" (C. Rosace and D. Rosace) under the Tool Bar.



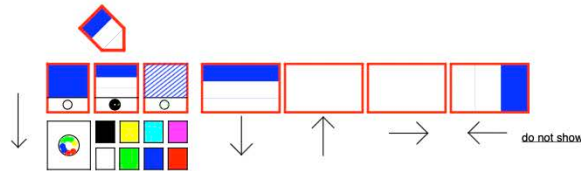
n = 20



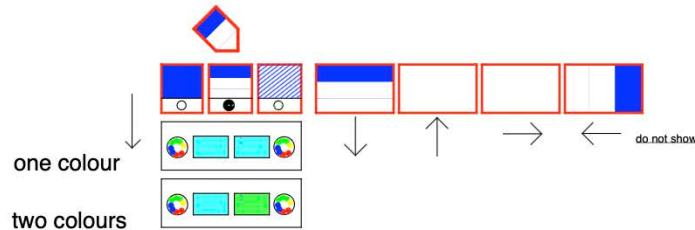


2021.03.23

Old Attribute Bar, P/S



New Attribute Bar, P/S



We can (and should) maintain the same Attribute Bar showing the four principal directions, so the user can immediately view the result of her choice. This follows our principle in Geometria. The default attribute is identical colours. To use two distinct colours, the second wheel should be clicked and the other colour to be selected. To avoid confusion (?), the wheel and the coloured rectangle are both active buttons, they both bring on the colour wheel.

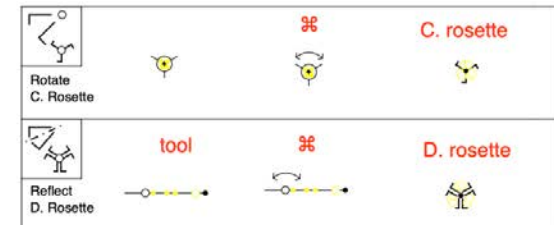
This is a simplified version of the Apple interface: we don't need the angle function and reversible arrows.

I hope this beauty is in the Apple Toolbox.

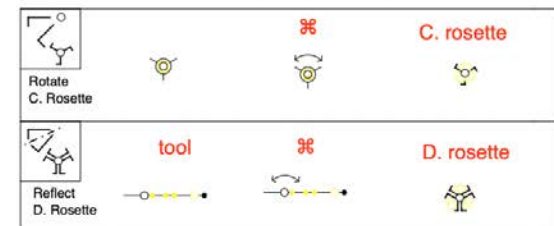
2021.03.24

R/C, R/D

old cursors



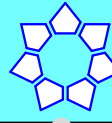
revised cursors



The little central circle (maybe one point larger than a node) should be transparent, so we can see underneath a dot, a node or an intersection, destined to be the center of rotation. I think the actual cursors are a bit larger than above; they are the correct sizes. I know that the cursor snaps on something below, but it's reassuring to see it!

Questions:

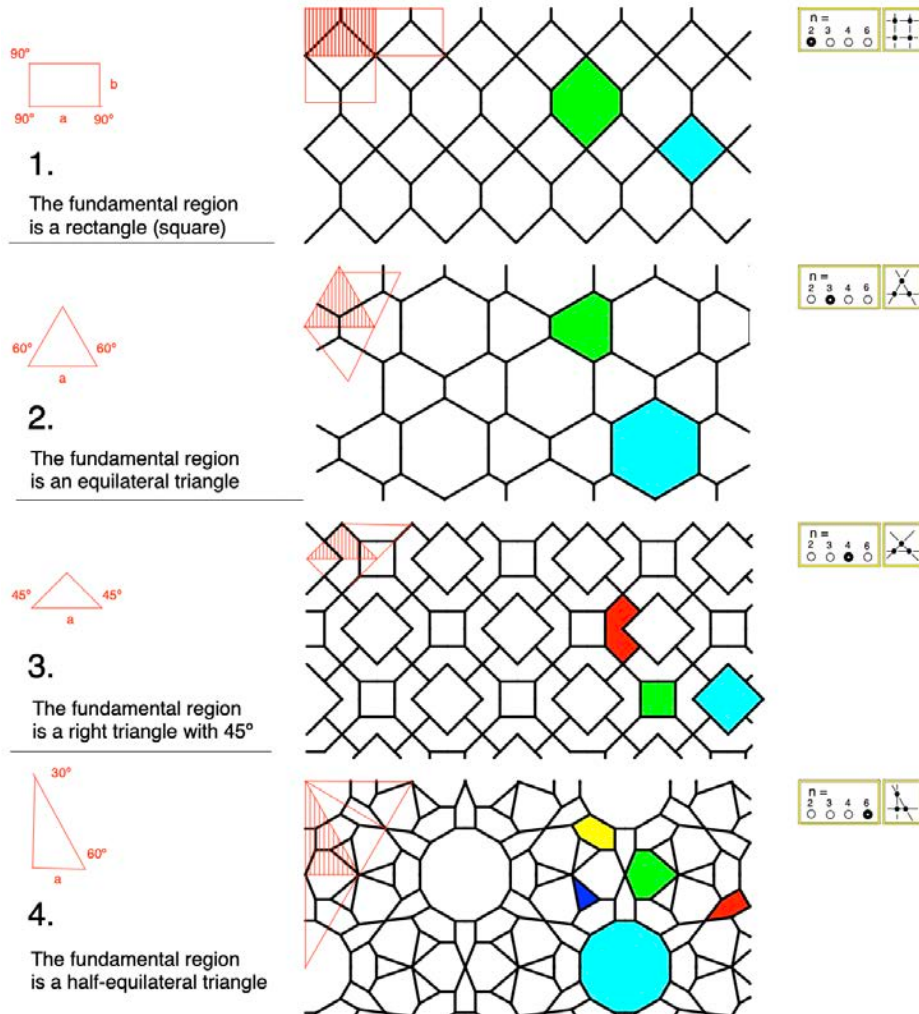
1. alternate method to generate mosaics
2. to save .geo in .jpeg format
3. to copy and paste .geo into .rft
4. to control the Paste: size and crop



2021.03.25

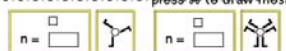
Tiling by reflection R/D ☞

These 4 tilings are unique among the 17 possible tilings, they are generated by using only reflection



R/C, R/D

The Attribute Bars for R/C and R/D are modified to the new geometry, the rosace now is the same as in the toolbar.

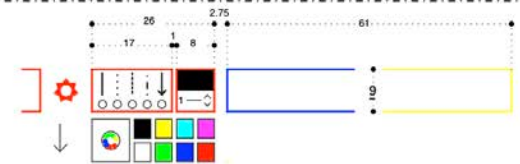


2021.03.26

Attribute and Option Bars, Colour Palettes and cursors

L/P, P/P, C/E, T/S

The Attribute Bar is extended to accommodate two new line types, present in Geometria 1. The Apple colour wheel is placed next to the Colour palette.



P/S

The P/S tool offers three functions:

1. solid colours, their tones
2. graded colours
3. coloured patterns

The cursor should display the choice.

I picked the colour dark blue for the three icons and the three cursors. The light blue used presently is nicer, but is hardly visible in the patterns.

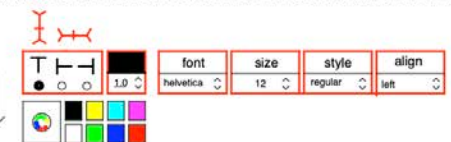
The colour picked in the Palette is presently highlighted very nicely. The same graphics should be used to highlight any of the four selected options. I could not draw it.

The cursor should be tested. It is pointing south-east on this drawing, maybe north-east would be better.

T/N

~~I gave up on the line spacing but inserted two orientations for writing in Y direction.~~

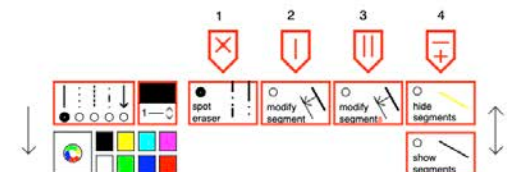
No, there is enough room for both! Also there was a boubou with the interface.

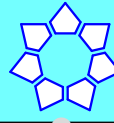


D/M

The D/M tool offers four options:

1. default tool, cursor: click to delete segments, drag to break or shorten segments
2. click a segment to modify
3. click a segment to modify all similar segments
4. click a segment to hide or show all similar segments

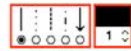
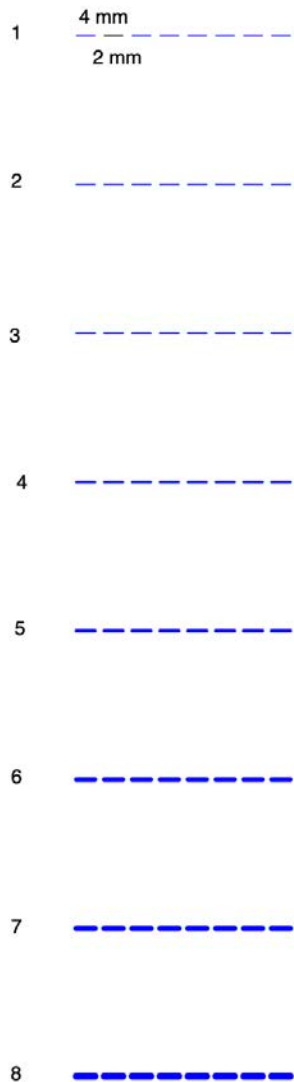




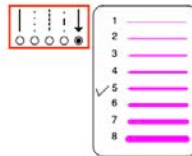
2021.03.30

2021.03.31

Dashed lines

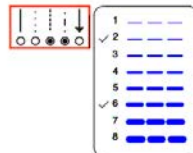


The arrows display in the selected colours. The stem of the arrows also follows the selected line thickness.

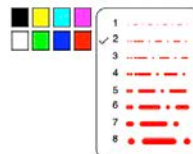


Scrolling menu

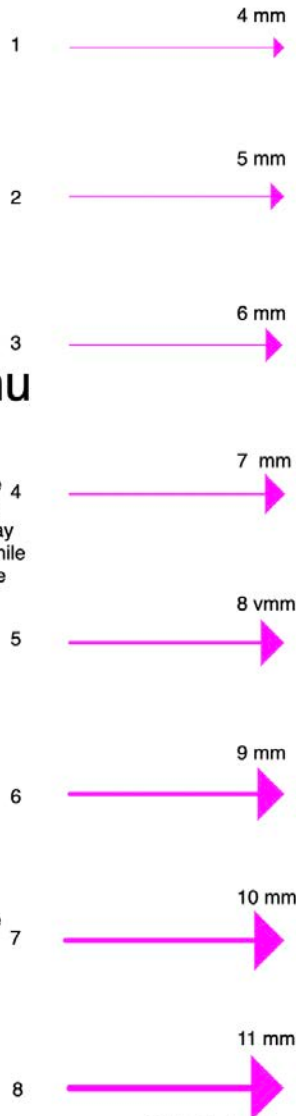
When you open the scrolling menu, the check mark is not visible. If you want to verify the attributes of a segment, select it, the scrolling menu will display the colour and the line type, while the check mark will indicate the line thickness of the selected segment.



Moving the palette to the left makes it possible to select colour and line thickness while seeing all the choices!



Arrows



L/P **T/S** **D/M**

Je croyais qu'on voulait que la barre d'attributs pour les styles de traits soit toujours rouge puisque qu'on considère que le style de trait est une forme d'annotation?

R/C **T/N**

R/D

Press ⌘ to draw mosaic

P/S

shades

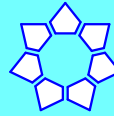
gradations

patterns

On a besoin de 2 couleurs pour les fondus.

Attribute bars, option bars, cursors

Drawing 06 2021.03.20



2021.05.03

L/P, P/P, C/E, T/S

D/M

R/C

R/D

T/N

P/S

shades

gradient

patterns

Attribute bars,
option bars,
cursors

2021.09.07

Instead of showing the individual objects yellow when selected, display the yellow selection rectangle. Object intersecting with the rectangle will not be selected.

Untitled

no copy with copy distance d 91.24 angle a -162.82 percentage %

Press ⌘, drag endpoint to extend, rotate line

if you enter any values for percentage the fields d and α will go blank. Click the check button, the selected rectangle will proportionally change size according to the percentage.

Bonjour Louis,

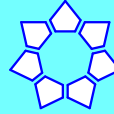
It is my fault, (as it happened other times). I told you to you to use percentages of the basic colours. The result on the left (09.02) shows that the contrasts (differences) for the yellow, the cyan and the green are very weak.

On the right, I darkened the basic yellow, cyan and green, than I played on the wheel. Probably, it is possible to do better, I am a Mickey Mouse in the colour world. I will ask Lorraine, she is good at it

Please send the latest version to llavigne@me.com.

the last version

a proposal



2021.05.06

Agenda: Geometria 2 • 2021.05.06

Phase 1.

Completion of all interface graphics

- P/S tool to be renamed C/H
- Change the standard Attribute Bar (AB): scrolling menu for line thickness and color
- Extend AB for R/C, R/D
- Include the 4 options in OB when ⌘ is pressed see dwg 06 (2021.04.02); coding in other phase
- Show OB for Gradients
- Revision of the cursors for R/C, R/D, gradient, hatch and D/M
- Install AB and OB for T/N
- Install OB for D/M
- Add thin black lines to the frames of transformation TB and OB

Phase 2.

Completion of the basic functions:

- Completion of C/H, T/N and D/M
- Selection of polygon: little black squares
- Non printable margins to be grey
- Menu item: Select All Text
- Fill circle, arc of circle, fill ellipse, arc of ellipse and free hand curves
- Preference window: units and scale
- Gradient OB function
- Polygonal selection
- Paste selection in center of page
- Paste .jpeg and .mov files in Geometria
- Crop, scale and edit pasted images
- A point on an arc is an intersection
- Keep the cursor the same on different screens
- Prevent shrinking of the screen

Phase 3.

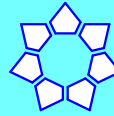
Adding new functions:

- Automatic scrolling of text at the page bottom
- Display ruler when text is selected, also in menu
- Width of paragraph is modifiable when selected
- Cropping and scaling a pasted selection
- Preference window: to complete
- Press Shift in L/P to draw horizontal, vertical lines
- Press Shift to toggle C/E and L/P
- Automatic Save when closing doc
- Paste .geo in TextEdit (KeyNote and Pages ?)
- Make Info Bar function
- Control click Geo icon: blank note (help) page, edited by user

Phase 4.

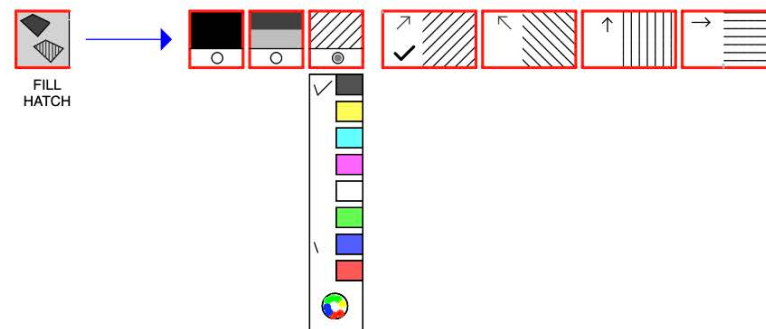
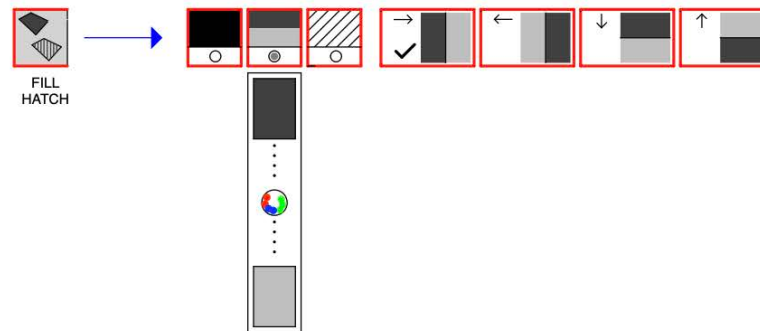
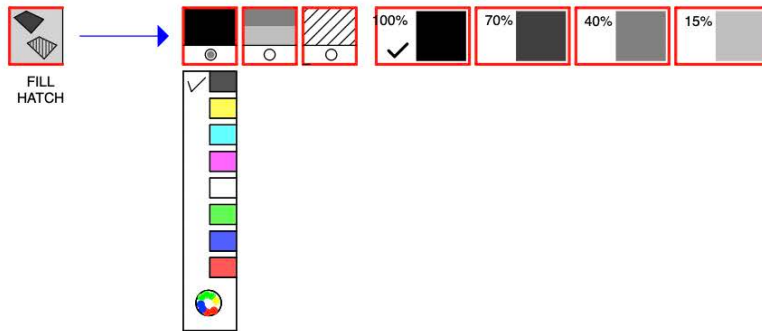
Version 1.0 Geometria 2:

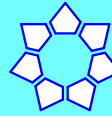
- Fill (color, gradient, hatch) polygons with holes
- Use the gray part of the window to draw, edit, but don't print or save
- C/H tool: polygon is closed if end points are within 2 (?) pixels
- Smoothing the freehand curves
- New animation of mosaics
- Coding the 3 mosaics with reflection
- Layers, see Geometria 1
- Automatic zoom if near (8 pixels) two magnetic points
- Scroll to see drawing hidden by Help
- Eliminate segments on existing segments (duplicates)
- Automatic scrolling while drawing for L/P, P/P, C/E



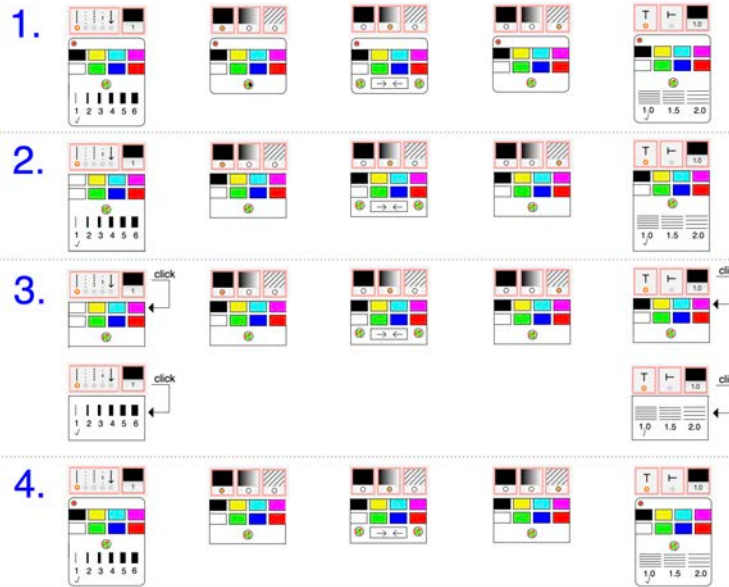
2021.09.07

Attribute and Option Bars for the Fill/Hatch tool



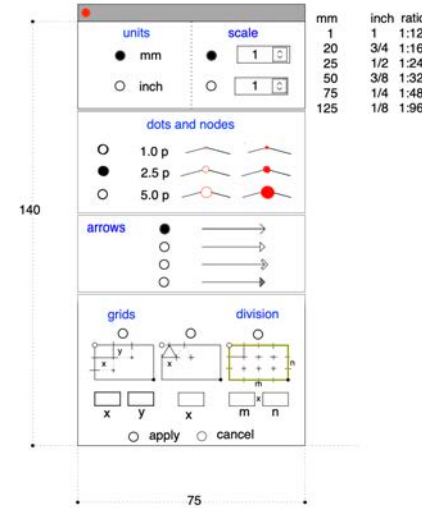


2022.01.24



2022.04.28

Preferences



The Preferences dialogue is displayed by clicking the menu item in the Geometria 2 menu, or by typing **⌘P**; closed by clicking the red button.

The dimensions of the box is 75x140 mm. It will be fully displayed on the screen of a 13" MacBook without scrolling. (what about the smaller MacBook Air?).

The location of the dialogue box is exactly the area occupied by the Help dialogue, so the user sees most of the working window simultaneously with the Preferences dialogue. A click on any radio button and the effect is instantly visible on the selection.

Dots, nodes. Select one of the three sizes for a new drawing. Select the nodes of an existing drawing and click the desired radio button in order to change them. The result will be displayed in the drawing, once you click the radio button.

Units. Units are millimetre or inch.

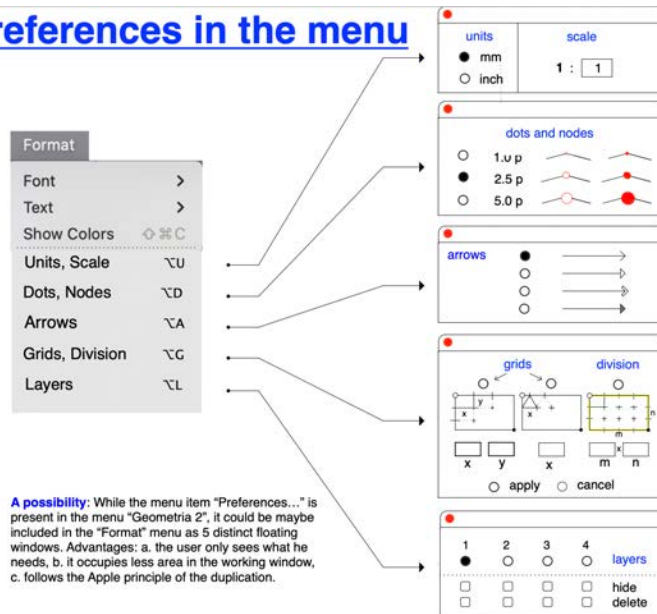
Scale. We offer in metric and imperial scales the most popular, most frequently used ratios. The scales of existing objects maybe changed by selecting them and clicking on the revised scale. For instance, objects drawn in 1:2 scale are selected and revised to 1:5 scale, the objects will appear 1/5th of the original size..

Arrows. Select one of the types for a new drawing. Select the arrow of an existing drawing and click the desired radio button in order to change them. The result will be displayed in the drawing, once you click the radio button.

Grid, division. The Grid tool offers two options: a rectangular grid (x, y), or a triangular (equilateral) grid (x) of the full window. The Division tool divides a selected rectangle into m equal columns and n equal rows. Click the radio button to select a grid or a division, fill in the parameters and click Apply. Click Cancel to delete the grid or the division, or press **⌘Q**.

2022.09.13

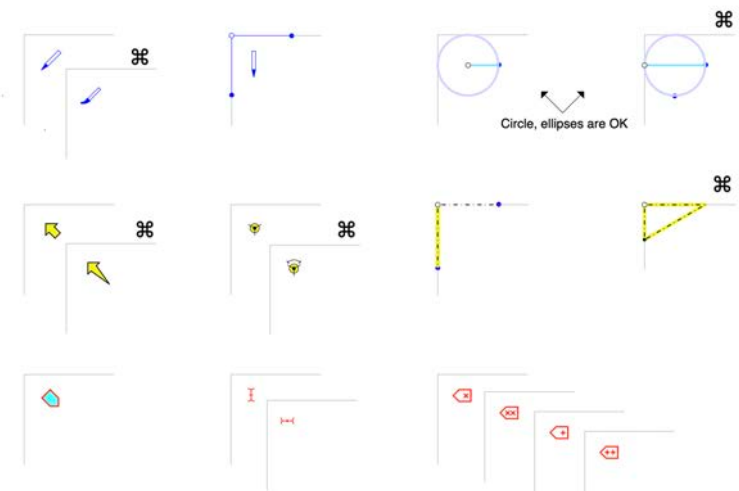
Preferences in the menu



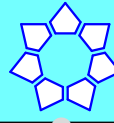
A possibility: While the menu item "Preferences..." is present in the menu "Geometria 2", it could be maybe included in the "Format" menu as 5 distinct floating windows. Advantages: a. the user only sees what he needs, b. it occupies less area in the working window, c. follows the Apple principle of the duplication.

2022.09.13

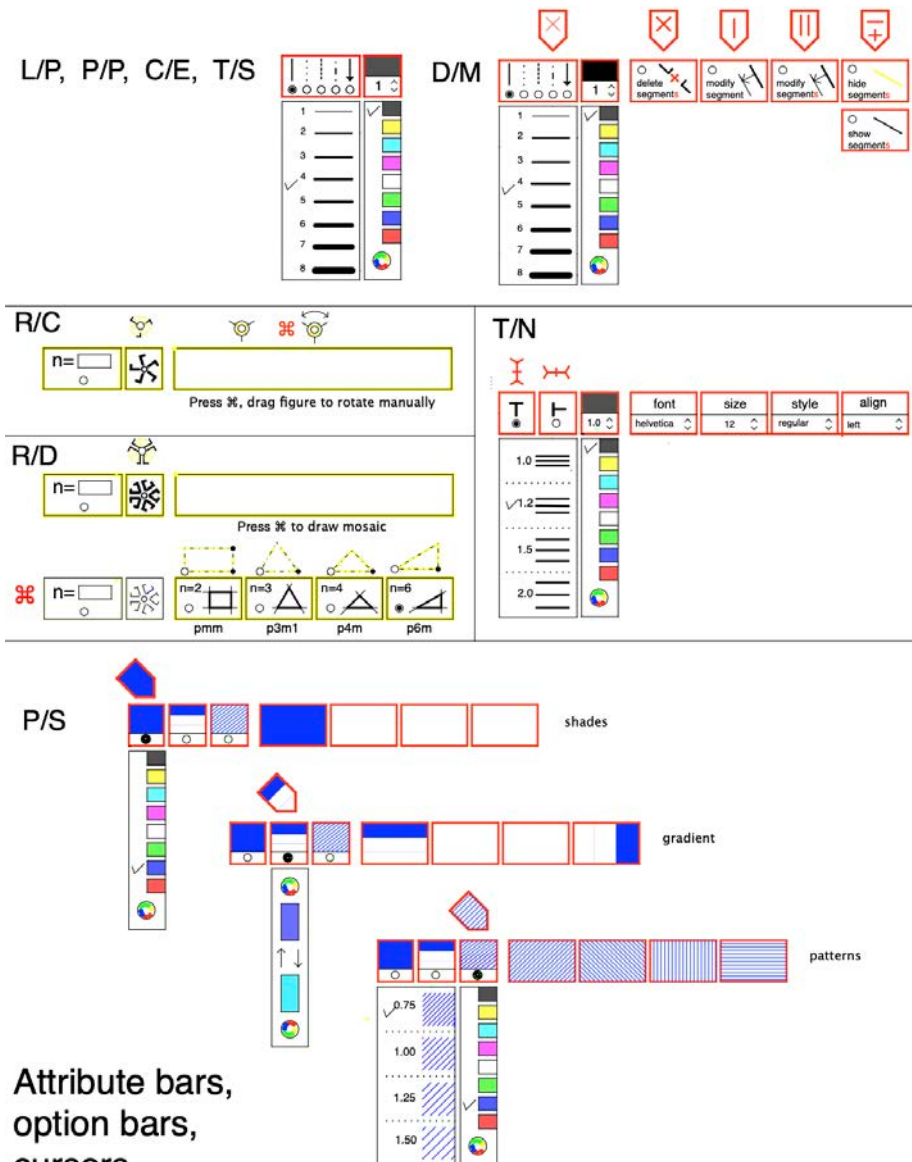
When a tool is selected, the following images appear in the upper left corner:



is it possible to fill with grey the non printable area?

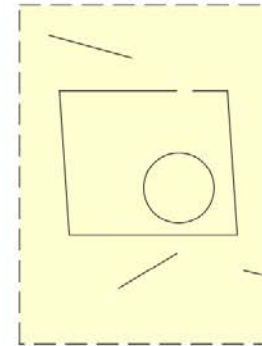


2021.04.02

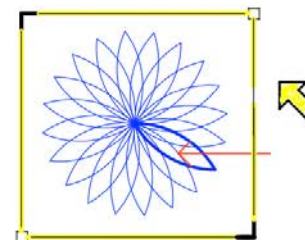
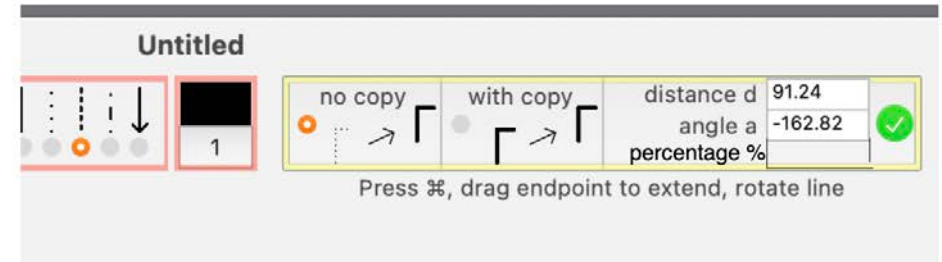


Attribute bars,
option bars,
cursors

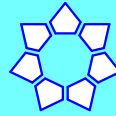
2021.08.11



Instead of showing the individual objects yellow when selected, display the yellow selection rectangle. Object intersecting with the rectangle will not be selected.

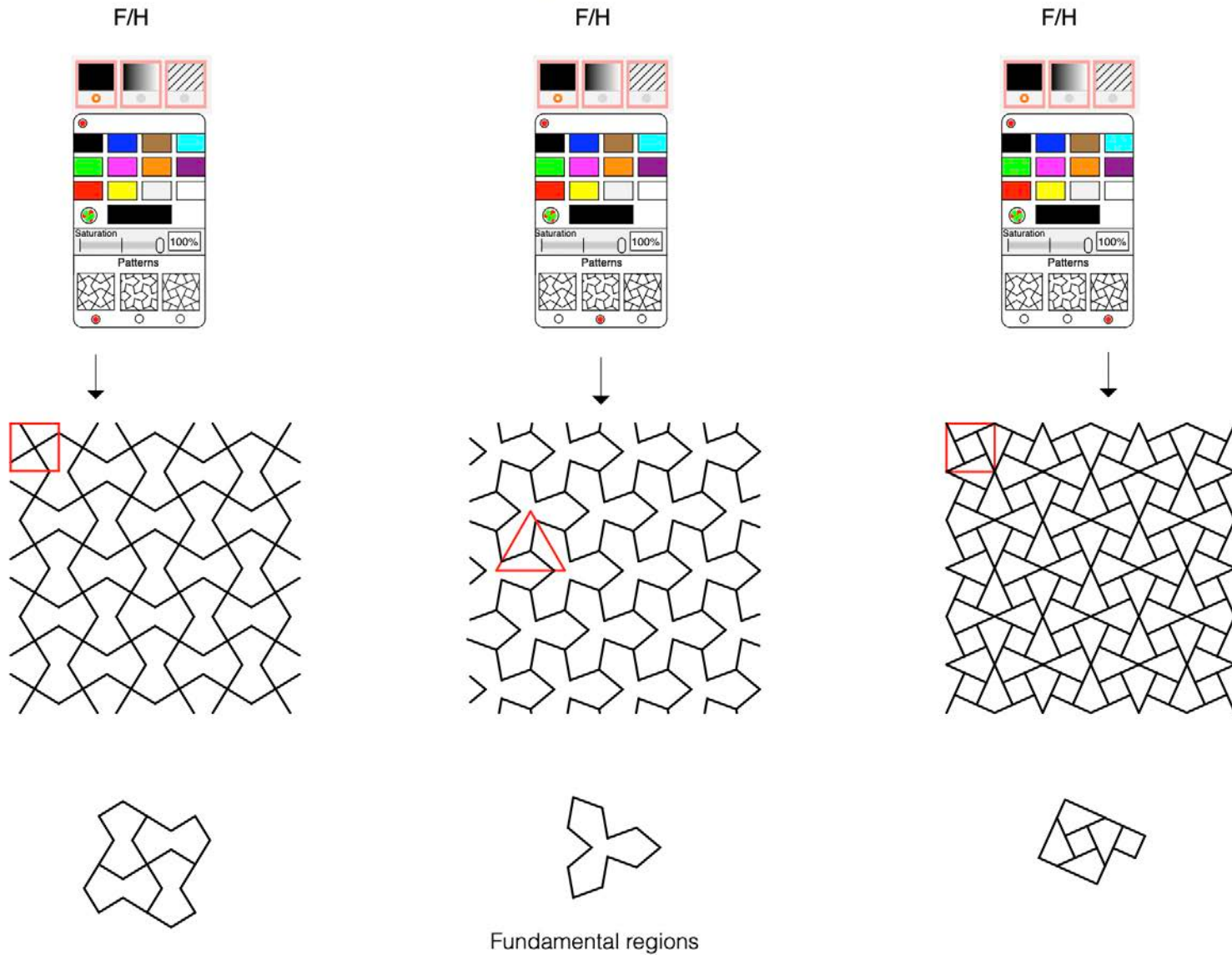


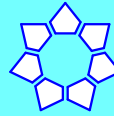
if you enter any values for percentage the fields d and α will go blank. Click the check button, the selected rectangle will proportionally change size according to the percentage.



2019.11

Fill patterns



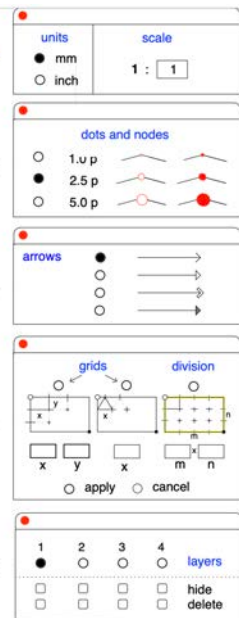


2022.09.02

Preferences in the menu

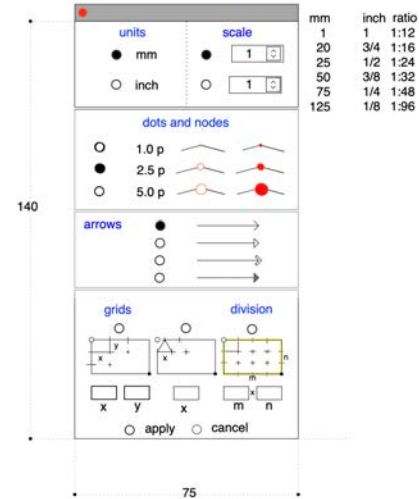


A possibility: While the menu item "Preferences..." is present in the menu "Geometria 2", it could be maybe included in the "Format" menu as 5 distinct floating windows. Advantages: a. the user only sees what he needs, b. it occupies less area in the working window, c. follows the Apple principle of the duplication.



2022.09.23

Preferences



The Preferences dialogue is displayed by clicking the menu item in the Geometria 2 menu, or by typing $\mathcal{K}$; closed by clicking the red button.

The dimensions of the box is 75x140 mm. It will be fully displayed on the screen of a 13" MacBook without scrolling. (what about the smaller MacBook Air?).

The location of the dialogue box is exactly the area occupied by the Help dialogue, so the user sees most of the working window simultaneously with the Preferences dialogue. A click on any radio button and the effect is instantly visible on the selection

Dots, nodes. Select one of the three sizes for a new drawing. Select the nodes of an existing drawing and click the desired radio button in order to change them. The result will be displayed in the drawing, once you click the radio button.

Units. Units are millimetre or inch.

Scale. We offer in metric and imperial scales the most popular, most frequently used ratios. The scales of existing objects may be changed by selecting them and clicking on the revised scale. For instance, objects drawn in 1:2 scale are selected and revised to 1:5 scale, the objects will appear 1/5th of the original size.

Arrows Select one of the types for a new drawing. Select the arrow of an existing drawing and click the desired radio button in order to change them. The result will be displayed in the drawing, once you click the radio button.

Grid, division. The Grid tool offers two options: a rectangular grid (x, y), or a triangular (equilateral) grid (x) of the full window. The Division tool divides a selected rectangle into m equal columns and n equal rows. Click the radio button to select a grid or a division, fill in the parameters and click Apply. Click Cancel to delete the grid or the division, or press $\mathcal{K}$ q

2022.09.25

Bonjour Louis,



Again a change, but I hope this is an improvement. Drawing a lot with the new interface, I came to realize a conflict (mental) with the new attribute window. I start a drawing and move the window right away because the default location is occupying precious real estate. Then a little bit later, I want to change the line thickness or colour, I click again in the original attribute window because it is there! Now the AW will jump back to the default location, and I have to move it again outside.

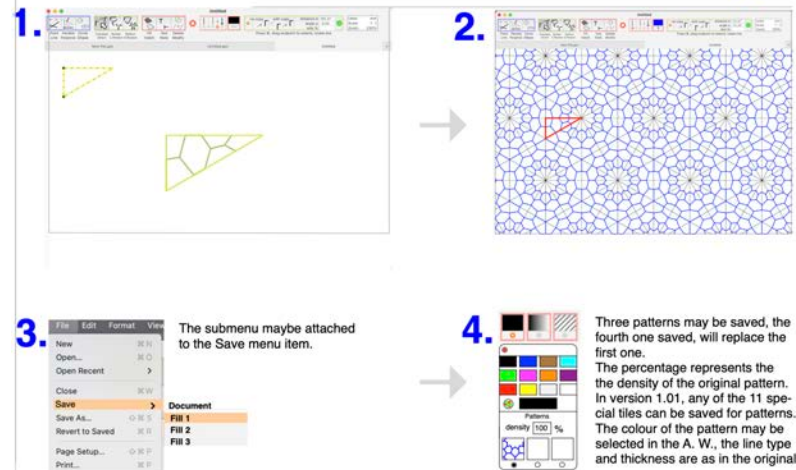
So, I propose the followings:

1. The default position of the AW should be outside the working window, as shown above.
2. When you click the Colour, Line Thickness icon, it becomes light grey. When you close the AW with the red button, the icon becomes active.
3. The AW remains mobile.

In the next version (1.01), we shall consider to place the Line Types in the AW, as you suggested and revise the graphics accordingly.

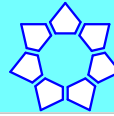
2022.09.28

Saving patterns generated by the $\mathcal{K}$ T/D tool to be used as fill (F/H).



Six of the 60° - 30° triangles form the fundamental region of the pattern.

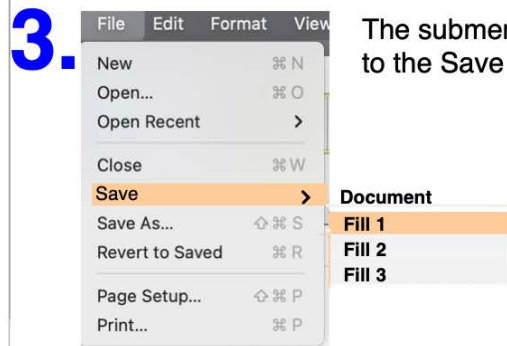
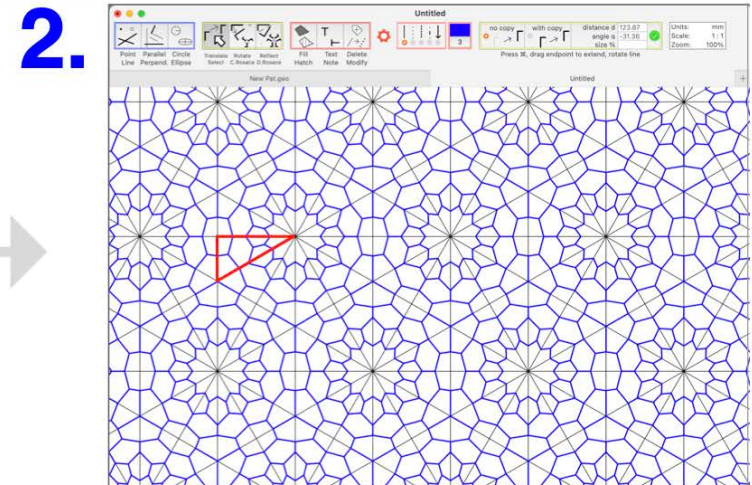
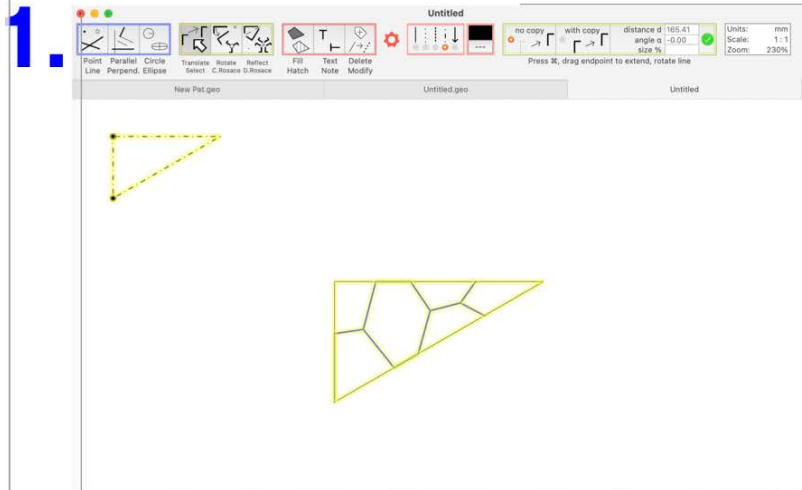
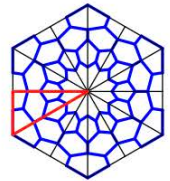




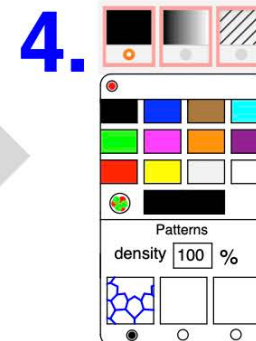
2022.12.03

**Saving patterns generated by the
⌘ T/D tool to be used as fill (F/H).**

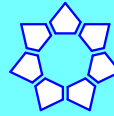
Six of the $60^\circ - 30^\circ$ triangles
form the fundamental region of
the pattern.



The submenu maybe attached
to the Save menu item.



Three patterns may be saved, the
fourth one saved, will replace the
first one.
The percentage represents the
the density of the original pattern.
In version 1.01, any of the 11 spe-
cial tiles can be saved for patterns.
The colour of the pattern may be
selected in the A. W., the line type
and thickness are as in the original.



2022.12.07

In Geometria[©] the more elaborate transformation tools to create tilings and patterns are already more advanced in comparison with other software. The following proposal however is a major advance in this field in content, structure and interface.

The three basic transformations were not treated equally: translation, rotation and reflection. We did not have a digital function for translation, reflection had one sub-functions (R/D, p6m) and rotation non.

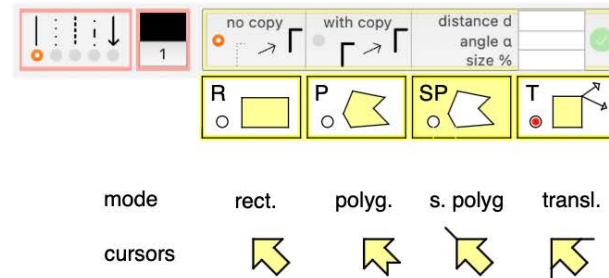
To correct this shortfall, (1) we introduce a new digital tool for translation, (2) we complete the sub-functions for R/D (previously planned) and (3) we add four sub-functions for rotations (R/C.)

Interestingly, among the 17 symmetry groups, there is a unique group which contains only translation (p1), **four groups** may be generated only by rotation while also **four groups** may be generated only by reflection. Version 1.01 will be updated with these three new functions.

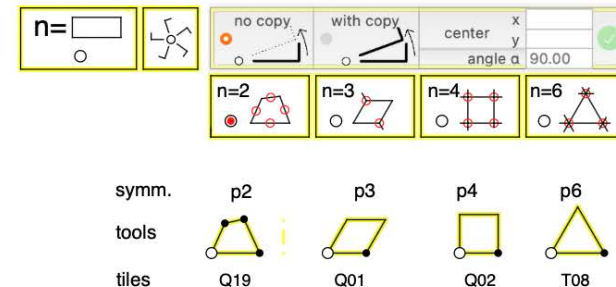
We continue to be very vigilant about Geometria's interface. We stay with our original nine construction tools. When we add options, they will only be visible if the corresponding construction tool is active. Different options display different cursors or tools.

We also care a lot about the visual and structural aspects of the windows of Geometria. It is a fortunate coincidence that the three transformations each need four sub-functions, which are displayed on the right. One problem to resolve: for the new options to stay in the gray zone, we are missing two millimetres; as they are drawn, they overhang the gray zone. Not nice! We have to find these two millimetres somehow!

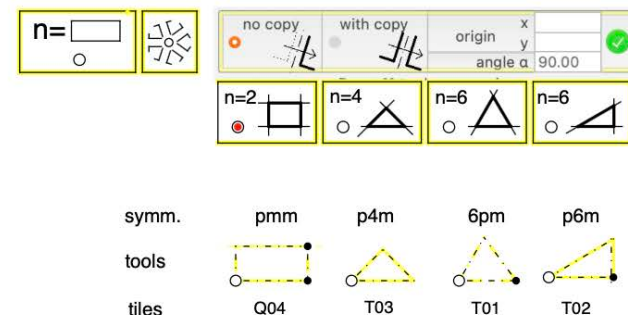
translation

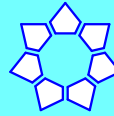


rotation



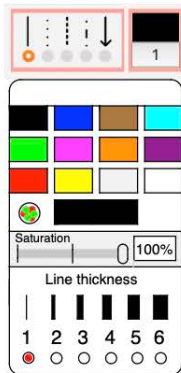
reflection



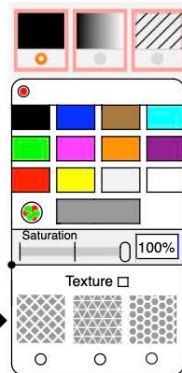


2022.12.10

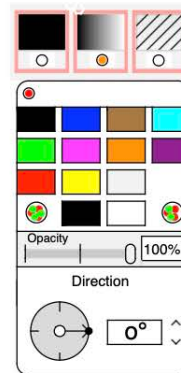
P/L, P/P, C/E, D/M



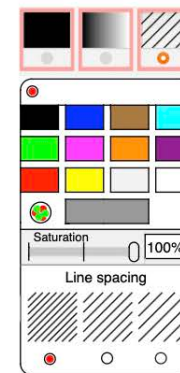
F/H



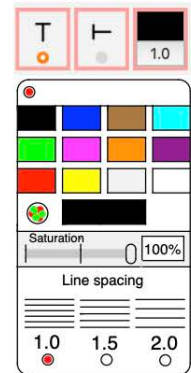
F/H



F/H



T/N



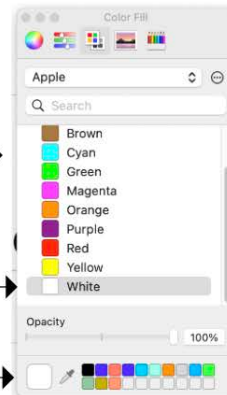
The three regular (basic) tilings.
The checkmark in the square button disappears after the Texture is applied.



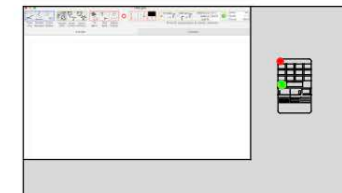
we use this simplified Colour Wheel.

The 12 colours in the Attribute Window are the 11 colours of the Apple Wheel plus a light gray (5%) which is often used as a background colour for illustrations.

Six line thicknesses are sufficient with more contrast among them.

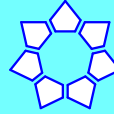


Instead of the check marks, the chosen colour will be displayed in the large rectangle and in the toolbox.



The Attribute Window may be displaced in the gray field and stays active

At any time only one floating window is visible. If you select the Wheel, it should cover the Attribute Window.



2022.12.14

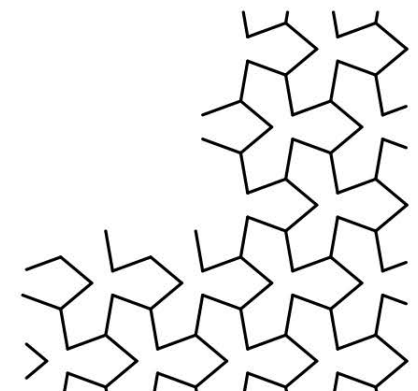
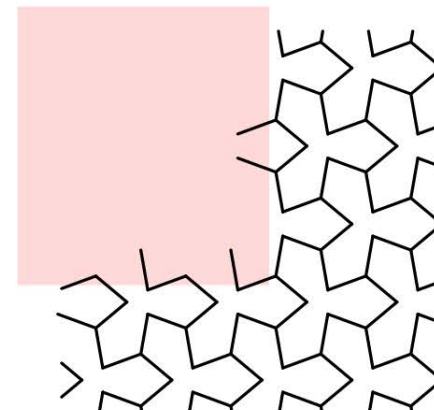
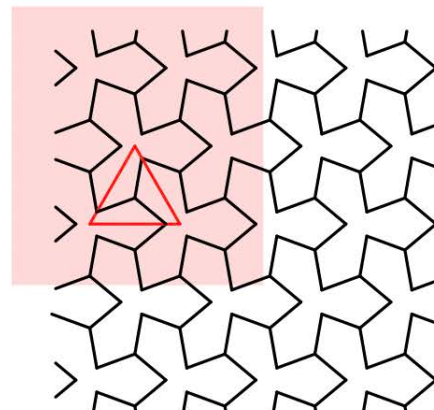
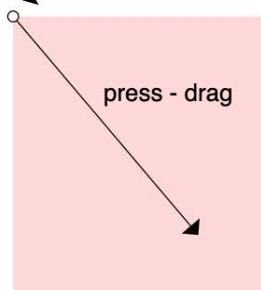
1.

We had a conflict between the T/S and the D/M tools. With T/S we could delete the selected group using the Delete Key, the standard method borrowed from word processing.

Let us use the D/M tool for a more natural delete process. Press and drag the cursor to delete the content of the rose rectangle directly. To undo the delete press ⌘Z.

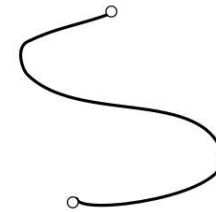


No conflict with the “erase part of a segment” function.
 cursor in the void



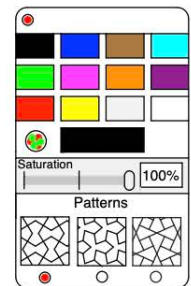
2.

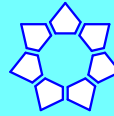
Snap dots or nodes on freehand lines:



3.

Tilings or patterns created with R/C or R/D can be saved as fill and the first three can be displayed in the Attribute window





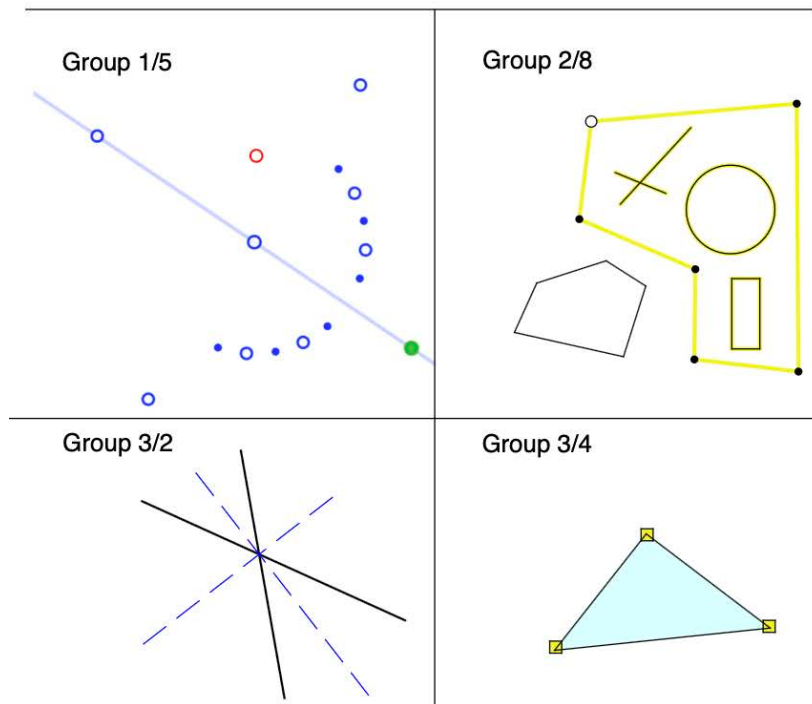
2022.12.17

1. Completion D/M
2. Attribute dialogue
3. Group 1.
4. Menus, Preferences

→ **Version 1.00**

1. Group 2
2. Group 3

→ **Version 1.01**



Group 1

1. P/P: hover the cursor in gray to bring the tool to the default position (to discuss it again!)
2. Close the gap between two segments if it is less than X mm, eliminate the coincidence of segments
3. For Help, **control**-click the tool.
4. P/L: double click to place a node, then click to toggle for dot or node.
5. P/P: When pressing ⌘, show the Y direction with a red node.
7. Automatic "save".delete
8. D/M: delete with selection
9. P/L: press Shift to draw lines in X or Y direction

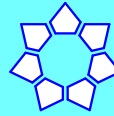
Group 2

1. P/L, T/S, R/C, F/H, T/N, D/M: Show the cursor in the upper left corner.
2. T/S, R/C and R/D: "with copy" or "no copy" use the last mode
3. C/E: press shift to use the P/L tool (to mark a dot).
4. T/N: shift-select several blocks of text
5. Change the cursor for  and the tool symbol.
6. If you have a limit for a function, ring the bell when it occurs
7. Paste the selection in the centre of the window, when copied from another page.
8. Polygonal selection.

Group 3

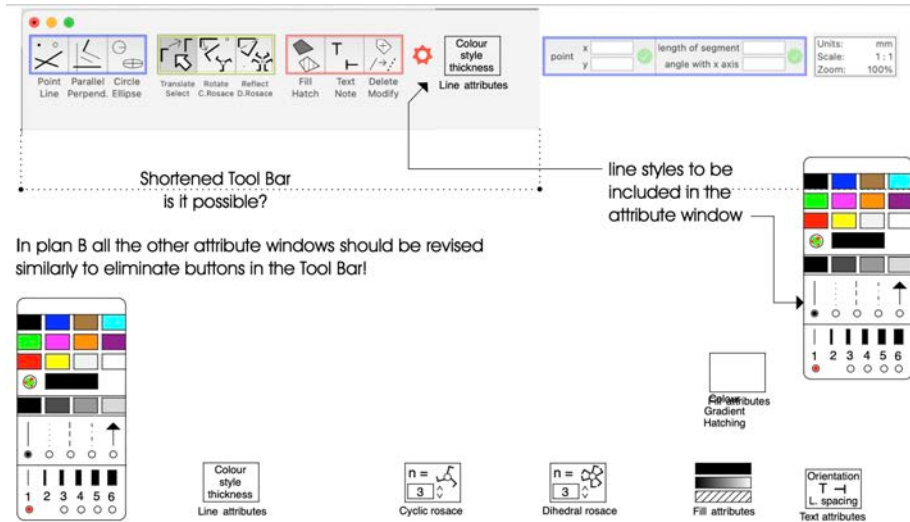
1. Draw in the gray area; it is not saved and does not print
2. P/P: When checking angles of two lines (⌘), show bisectors with blue lines (---).
3. D/M: update Transformations (2022.09.19)*
4. F/H: when a fill is selected, it is indicated by little black squares filled with yellow on the vertices. Reason: to see in real-time the modified colour.
5. Scroll the bottom of the page automatically for text or drawing.
6. Crop and scale pasted selection (to be discussed later).
7. Use + or - to resize nodes and dots

Geometria2



Interface Design

2023.01.03



In plan B all the other attribute windows should be revised similarly to eliminate buttons in the Tool Bar!

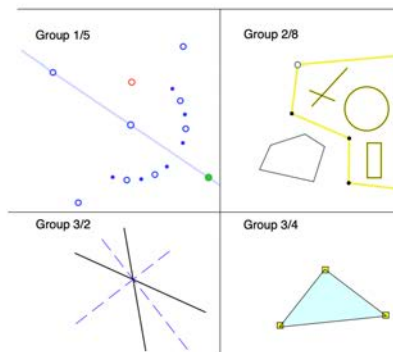
2023.01.04

1. Completion D/M
2. Attribute dialogue
3. Group 1.
4. Menus, Preferences

→ Version 1.00

1. Group 2
2. Group 3

→ Version 1.01



Group 1

1. P/P: hover the cursor in gray to bring the tool to the default position (to discuss it again!)
2. Close the gap between two segments if it is less than X mm, eliminate the coincidence of segments
3. For Help, control-click the tool.
4. P/L: double click to place a node, then click to toggle for dot or node.
5. P/P: When pressing $\frac{\pi}{2}$, show the Y direction with a red node.
7. Automatic "save".delete--
8. D/M: delete with selection
9. P/L: press Shift to draw lines in X or Y direction--

Group 2

1. P/L, T/S, R/C, F/H, T/N, D/M: Show the cursor in the upper left corner.
2. T/S, R/C and R/D: "with copy" or "no copy" use the last mode
3. C/E: press shift to use the P/L tool (to mark a dot).
4. T/N: shift-select several blocks of text
5. Change the cursor for and the tool symbol.
6. If you have a limit for a function, ring the bell when it occurs
7. Paste the selection in the centre of the window, when copied from another page.
8. Polygonal selection.

Group 3

1. Draw in the gray area: it is not saved and does not print
2. P/P: When checking angles of two lines ($\frac{\pi}{2}$), show bisectors with blue lines (---).
3. D/M: update Transformations (2022.09.19)*
4. F/H: when a fill is selected, it is indicated by little black squares filled with yellow on the vertices. Reason: to see in real-time the modified colour.
5. Scroll the bottom of the page automatically for text or drawing.
6. Crop and scale pasted selection (to be discussed later).
7. Use + or - to resize nodes and dots

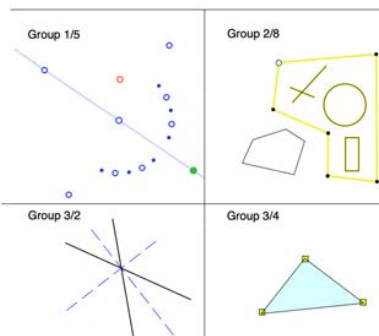
2023.01.09

1. Completion D/M
2. Attribute dialogue
3. Group 1.
4. Menus, Preferences

→ Version 1.00

1. Group 2
2. Group 3

→ Version 1.01



Group 1

1. P/P: hover the cursor in gray to bring the tool to the default position (to discuss it again!)
2. Close the gap between two segments if it is less than X mm, eliminate the coincidence of segments
3. For Help, control-click the tool.
4. P/L: double click to place a node, then click to toggle for dot or node.
5. P/P: When pressing $\frac{\pi}{2}$, show the Y direction with a red node.
7. Automatic "save".delete--
8. D/M: delete with selection
9. P/L: press Shift to draw lines in X or Y direction--

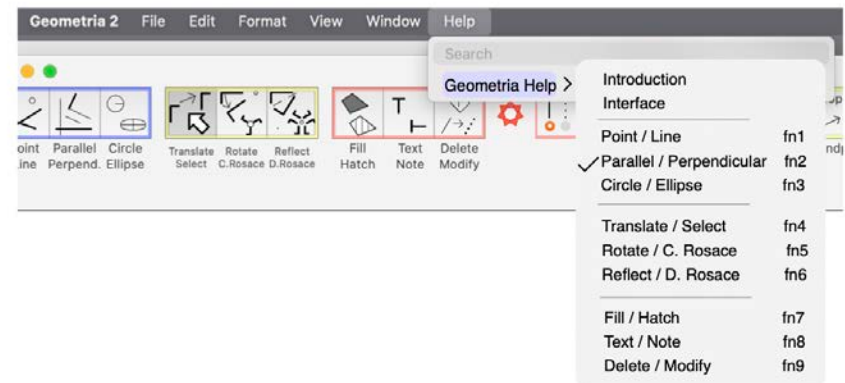
Group 2

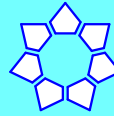
1. P/L, T/S, R/C, F/H, T/N, D/M: Show the cursor in the upper left corner.
2. T/S, R/C and R/D: "with copy" or "no copy" use the last mode
3. C/E: press shift to use the P/L tool (to mark a dot).
4. T/N: shift-select several blocks of text
5. Change the cursor for and the tool symbol.
6. If you have a limit for a function, ring the bell when it occurs
7. Paste the selection in the centre of the window, when copied from another page.
8. Polygonal selection.

Group 3

1. Draw in the gray area: it is not saved and does not print
2. P/P: When checking angles of two lines ($\frac{\pi}{2}$), show bisectors with blue lines (---).
3. D/M: update Transformations (2022.09.19)*
4. F/H: when a fill is selected, it is indicated by little black squares filled with yellow on the vertices. Reason: to see in real-time the modified colour.
5. Scroll the bottom of the page automatically for text or drawing.
6. Crop and scale pasted selection (to be discussed later).
7. Use + or - to resize nodes and dots

2023.01.11





2019.11

1. Would be nice to be able to draw an arc with an arrow

Geometria 1

Plan B2: On n'utilise plus la barre d'outil d'Apple. Nos outils sont la fenêtre (window body). Autre avantage: je pourrais faire des rr outils sur mon Mac M1 (ce qui n'est pas possible maintenant).

2. We can control the centre of the cyclic rosace, but no control for the centre of the dihedral rosace!

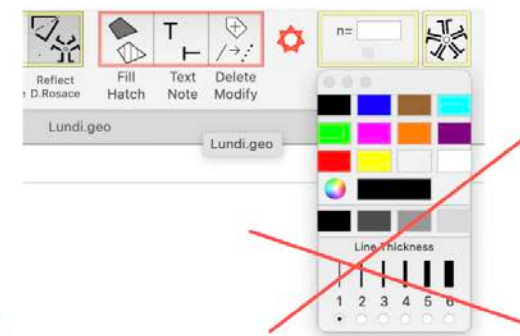
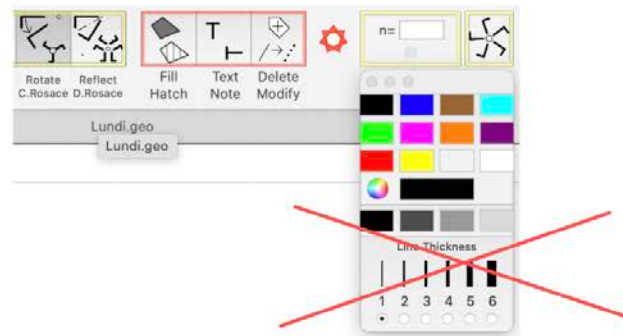
motif and center

R/C

R/D

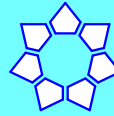
the closest location of the centre of rotation

3. When you click the R/C or the R/D tools, the Attribute Window should disappear.



4. The "with copy" option and the text attributes should stay active





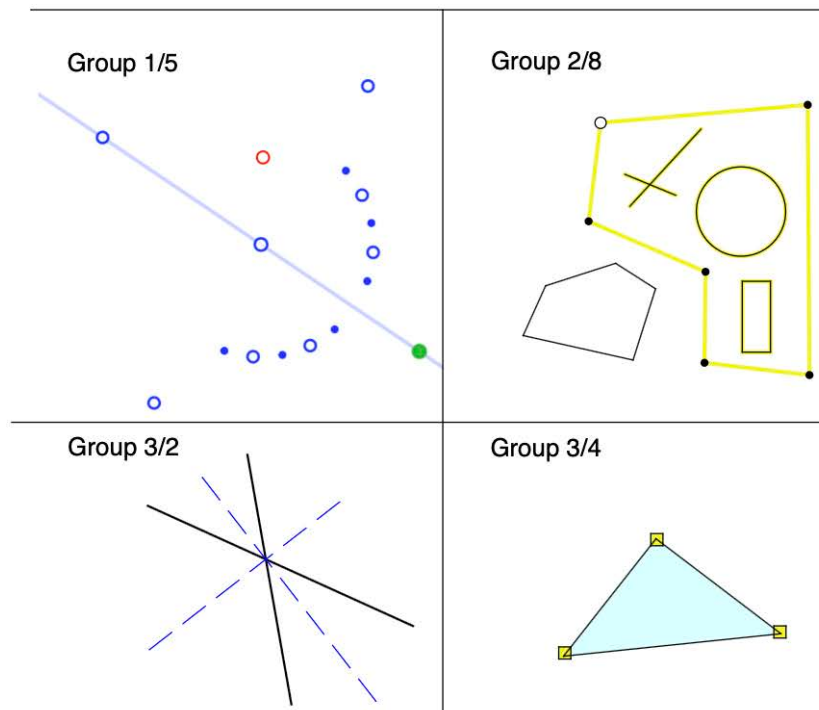
2023.01.14

1. Completion D/M
2. Attribute dialogue
3. Group 1.
4. Menus, Preferences

→ **Version 1.00**

1. Group 2
2. Group 3

→ **Version 1.01**



Group 1

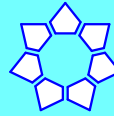
1. P/P: hover the cursor in gray to bring the tool to the default position (to discuss it again!)
2. Close the gap between two segments if it is less than X mm, eliminate the coincidence of segments
3. For Help, **control-click the tool**.
4. P/L: double click to place a node, then click to toggle for dot or node.
5. P/P: When pressing ⌘, show the Y direction with a red node.
7. Automatic "save".delete—
8. D/M: delete with selection
9. P/L: ~~press Shift to draw lines in X or Y direction~~
Correction of the T/S tool

Group 2

1. P/L, T/S, R/C, F/H, T/N, D/M: Show the cursor in the upper left corner.
2. T/S, R/C and R/D: "with copy" or "no copy" use the last mode
3. C/E: press shift to use the P/L tool (to mark a dot).
4. T/N: shift-select several blocks of text
5. Change the cursor for and the tool symbol.
6. If you have a limit for a function, ring the bell when it occurs
7. Paste the selection in the centre of the window, when copied from another page.
8. Polygonal selection.

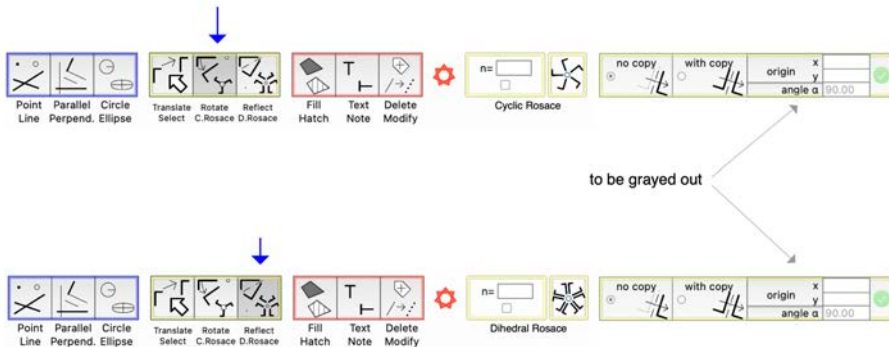
Group 3

1. Draw in the gray area; it is not saved and does not print
2. P/P: When checking angles of two lines (⌘), show bisectors with blue lines (— — —).
3. D/M: update Transformations (2022.09.19)*
4. F/H: when a fill is selected, it is indicated by little black squares filled with yellow on the vertices. Reason: to see in real-time the modified colour.
5. Scroll the bottom of the page automatically for text or drawing.
6. Crop and scale pasted selection (to be discussed later).
7. Use + or - to resize nodes and dots

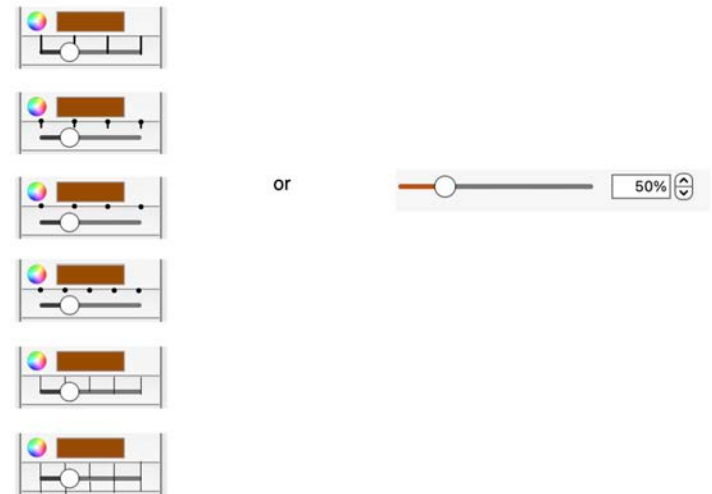


2023.01.16

While the R/C or the R/D tools are active, the Option Bar should be empty!

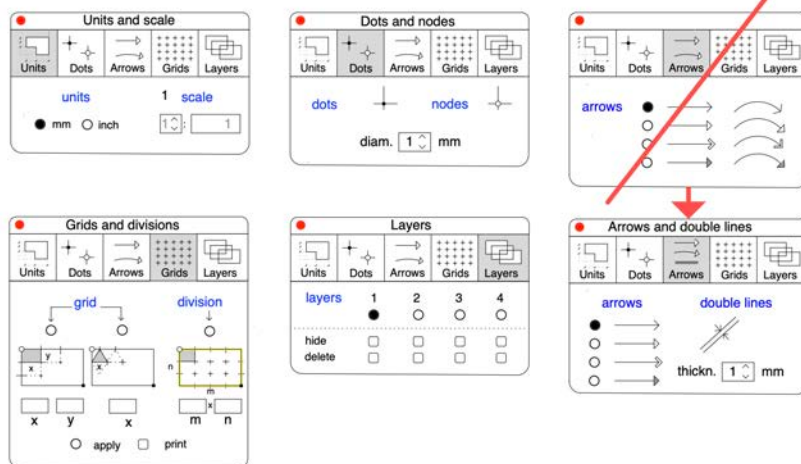


2023.01.18



2023.01.19

Settings 3



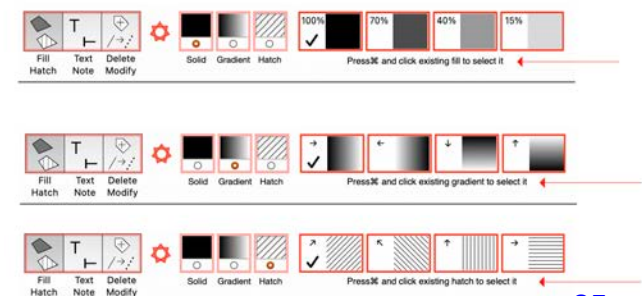
2023.01.23

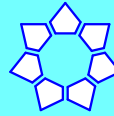
Bonjour Louis,

While working on a recent tiling, I had to repeat three distinct colours on four different drawings. The sliders work wonderfully, but even with numbers attached to them, they still require memory.

Can the feature shown below be installed (now or later)?

Ciao





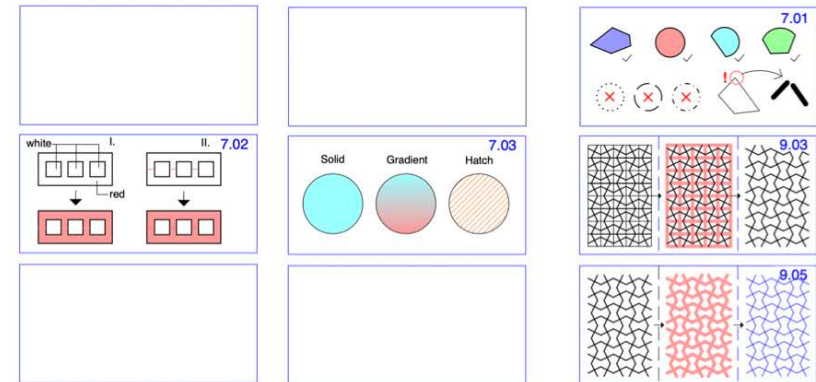
2023.02.03

Bonjour Louis,

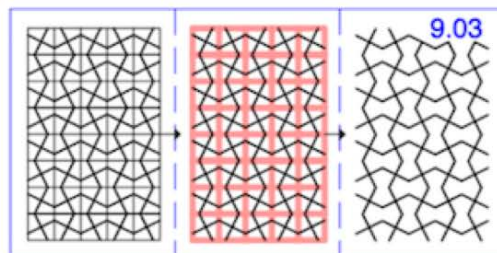
Problem: for Modify All and Delete All, when we click on an item, it will change all the items in the window. If I want to change some part of the window, I must do what is described below in Help.

Question I!: it would be nice, before clicking on the item, to draw (select) a red rectangle to limit the modification. The items will not be coloured.

Question II: Should this be for 1.0 or 1.01?



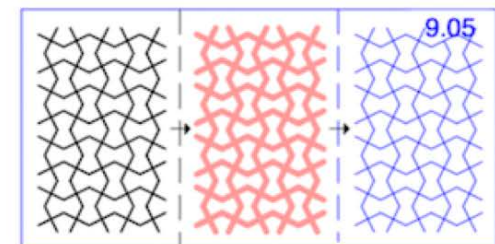
9.03 Click the D/M tool and check the **Delete All** option. Click on an item (see above); all items with precisely the same attributes will be deleted. This function applies to the entire window.



If you want to delete all items limited to a part of the window, do the followings:

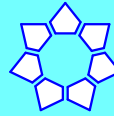
1. select and copy the part in question (T/S)
2. from the menu **File**, click **New**
3. paste the part in the new window
4. execute the **Delete All** option
5. copy the revised option
6. paste the revised option into the original window

9.05 Click the D/M tool and check the **Modify All** option. Select one or more attributes and click on an item. All items with precisely the same attributes will be modified to the selected attributes. This function applies to the entire window.



If you want to modify all items limited to a part of the window, do the followings:

1. select and copy the part in question (T/S)
2. from the menu **File**, click **New**
3. paste the part in the new window
4. execute the **Modify All** option
5. copy the revised option
6. paste the revised option in the original window



2023.03.20

Preferences (4)

Preferences (3)

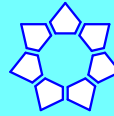
units		scale	
☒ mm	☐ inch	1	: 1
dots		nodes	
		1	mm
arrows			
☒		☐	
☐		☐	
grids		division	
x	y	x	y
☐ apply	☐ cancel		
layers			
1	2	3	4
☒	☐	☐	☐
hide	☐	☐	☐
delete	☐	☐	☐

units		scale	
☒ mm	☐ inch	1	: 1
dots and nodes			
☐	1.0 p		
☒	2.5 p		
☐	5.0 p		
arrows			
☒		☐	
☐		☐	
☐		☐	
grids			
x	y	x	y
☐ apply	☐ cancel		
layers			
1	2	3	4
☒	☐	☐	☐
hide	☐	☐	☐
delete	☐	☐	☐

Settings 2

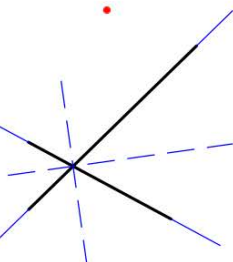
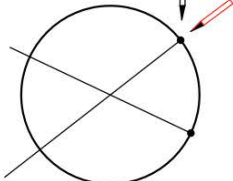
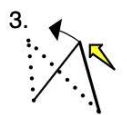
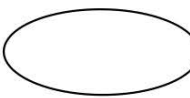
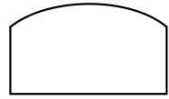
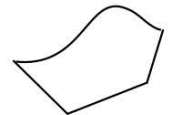
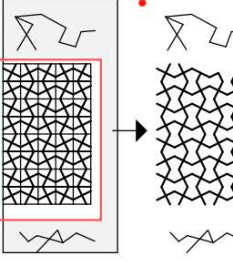
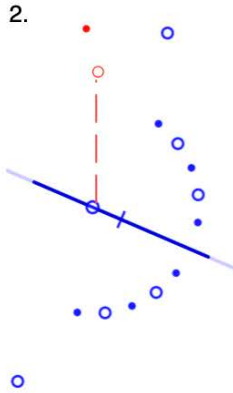
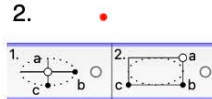
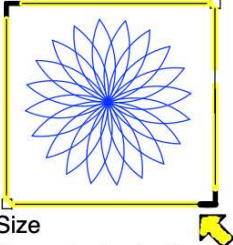
units		scale	
☒ mm	☐ inch	1	: 1
dots		nodes	
diam. 1 mm			
arrows			
☒		☐	
☐		☐	
☐		☐	
☐		☐	
grid		division	
x	y	x	y
☐ apply	☐ print		
layers			
1	2	3	4
☒	☐	☐	☐
hide	☐	☐	☐
delete	☐	☐	☐

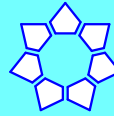
160



2023.03.29

• Bucket List •

 Point Line	 Parallel Perpend.	 Circle Ellipse	 Translate Select	 Fill Hatch	 Delete Modify
 Snap on endpoints of freehand lines	1  When checking angle between two lines, show show bisectors ---	1  Press Shift to toggle to P/L in order to draw dot on the circle	1.  2.  3. 	1.  2.  3. 	
 Text Note	2. 	2. 	1. and 2 are functioning now. 1. should be adjusted to improve ease of use 3. is new. A vertex with two incident segments should freely rotate in the plane	Fill regions limited by freehand curves, ellipses and elliptic arcs	When using the Delete All or the Modify All functions, first select the rectangular region where the functions should apply
60  The textbox width is controlled by a slider	When pressing ⌘, show the Y direction with a red node	Press Shift to draw the major axis in the X, Y directions	Crop  Size The pasted selection can be cropped and resized		

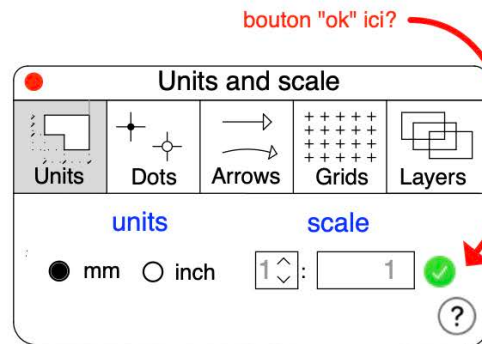


2023.03.30

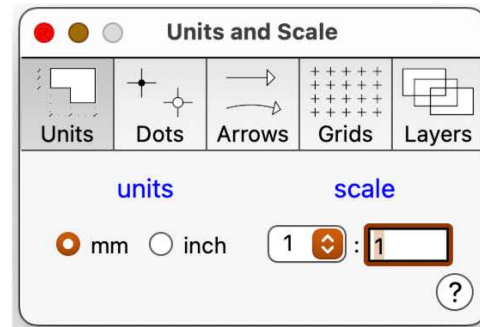
Settings

Units and Scale

If the unit is mm, the click on "?" will display the text.
If the unit is inch, the click on "?" will display the table "Imperial - digital scales".



bouton "ok" ici?



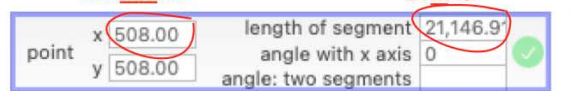
- Metric lengths are displayed in millimetres up to 10,000 mm, then in meters (xx.xxx)
- * Imperial lengths are displayed in inches up to 120", then in feet (xx.xxx)
- the denominator is an open field, you may enter any integer up to 200
- * the nominator is a scrolling menu from 1 to 5; this allows you to show details 2x, 3x, 4x, and 5x the actual dimensions.

Doit-on permettre des échelles comme 2:3 ou 5:4?

où va-t-on afficher les unités?

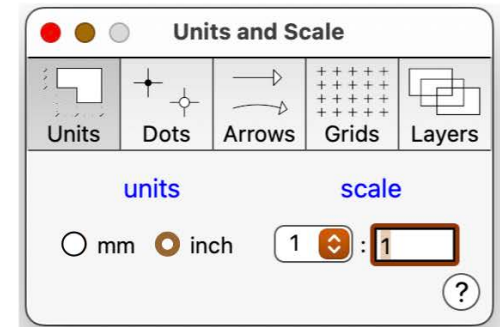
508mm ici

21m ici



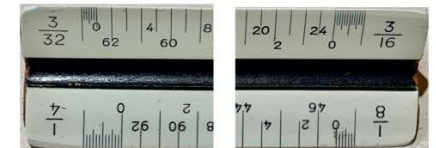
Press $\mathbb{M}$ to display multiples of 15 degrees

Solution possible(?): on utilise le mètre partout pour les échelles entre 1:100 et 1:200, le millimètre pour les échelles plus grandes.
Inconvénient: on va quelques fois dépasser 10000mm et on va aussi se retrouver parfois avec des fractions de m (ex: 0.508m).



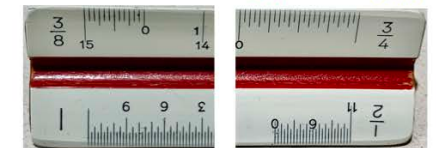
Imperial → digital scales

3/32 → 1:128 3/16 → 1:64



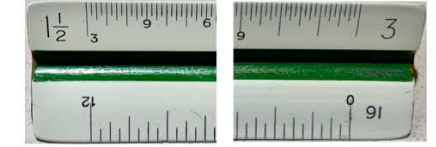
1/4 → 1:48 1/8 → 1:96

3/8 → 1:32 3/4 → 1:16

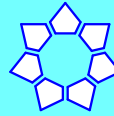


1 → 1:12 1/2 → 1:24

1 1/2 → 1:8 3 → 1:4

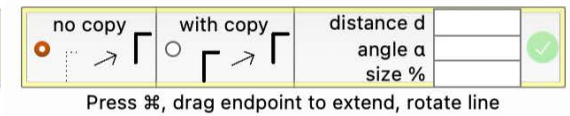
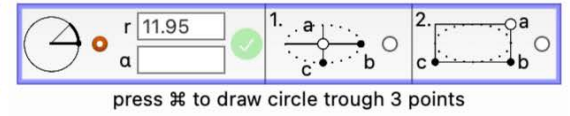
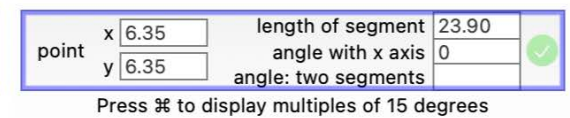
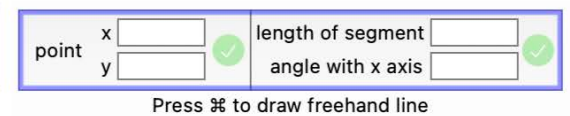
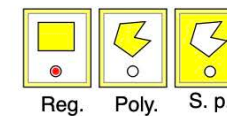
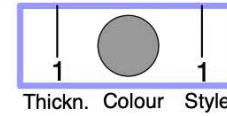
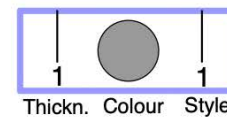
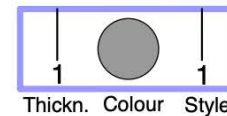
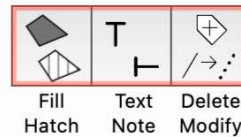
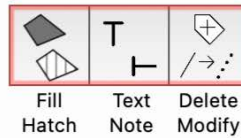
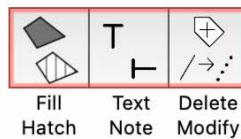
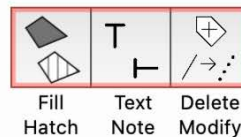
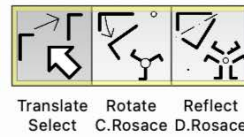
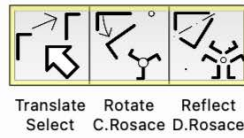
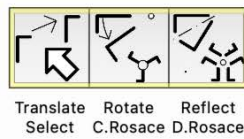
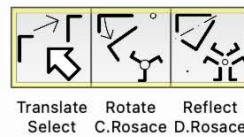
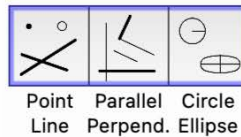
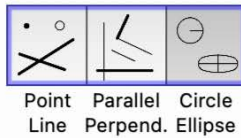
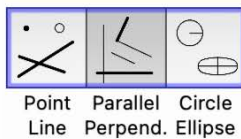
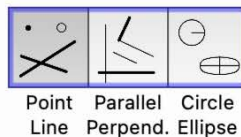


16 (full) → 1:1 16 (full) → 1:1



2023.04.13

• Update 1.01 •



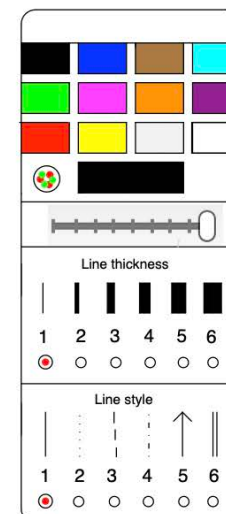
1. The line style choices are removed from the Attribute bar and placed in the floating Attribute Window. All the attributes of lines, circles, ellipses, fills, and texts are now in the same location (P/P, P/L, C/E, T/S, F/H, T/N and D/M).

2. P/P, P/L, C/E and D/M: the Attribute Bar will monitor (display) the selected attributes.

3. T/S: the Attribute Bar offers the three modes of selection.

4. R/C and R/D: the Attribute Bar offers three functions. In case of a rosette, the options are placed in the Option Bar.

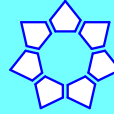
5. T/N: the Attribute Bar offers three orientations for text.



6. R/C and R/D: Presently, we have one mosaic with R/D. We will add 3 more with R/D and 5 new one with R/C. Th 9 new mosaics are the only non-symmetrical tiles that are generated with one type of symmetry operations, rotation only or reflection only.

The revised interface will result in a simpler preparation and an extended, rich animation.

The chosen polygon will be predrawn and you can see alive the animation of both, the polygon and the motif.



2023.05.23

Settings 2

Scale. The parameters are positive integers from 1 to 200, default scale 1 : 1

Dots and nodes

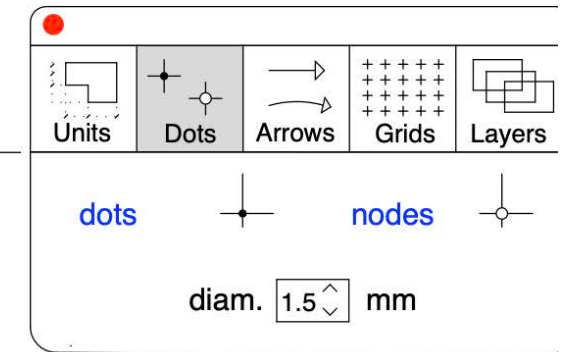
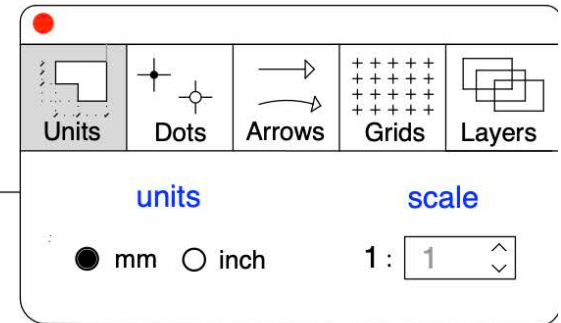
(existing node ○ 4.5 p = 1.59 mm)

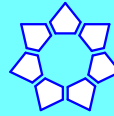
					
new diam.mm	1.0	1.5 default	2.0	2.5	3.0

(existing dot • 3.25 p = 1.15 mm)

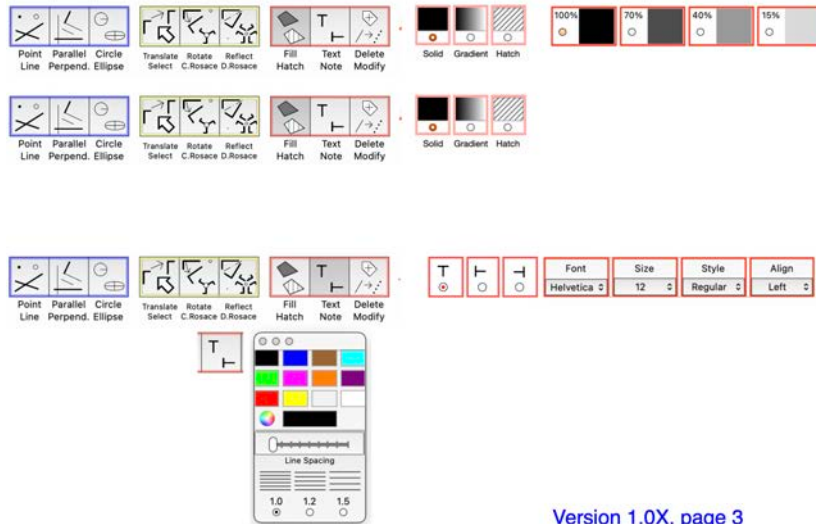
					
new diam. mm	1.0	1.5 default	2.0	2.5	3.0

Would be nice to animate the dots and nodes as you click the number:





2024.01.29



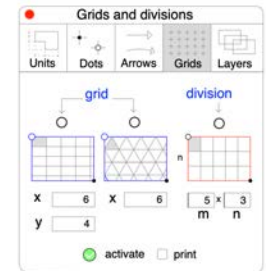
Version 1.0X, page 3

2024.06.01

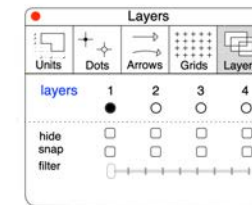
Bonjour Louis,

I agree with all your comments, except the graphics of Grid and Division. You are right that showing x and y is more precise, but my aim is to visually differentiate between Grid and Division. It is not clear for the non-initiated.

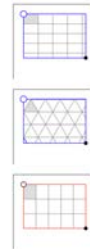
Ciao



min x = 4
min y = 4
min m = 2
min n = 2



The tools:



2024.07.01

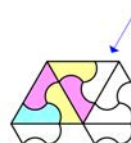
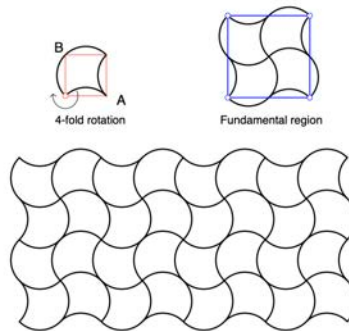
Bonjour Louis,

I send you this drawing for testing. Try to colour one tile, the entire tiling will be coloured!

I guess it is the tangent problem in the points A and B.

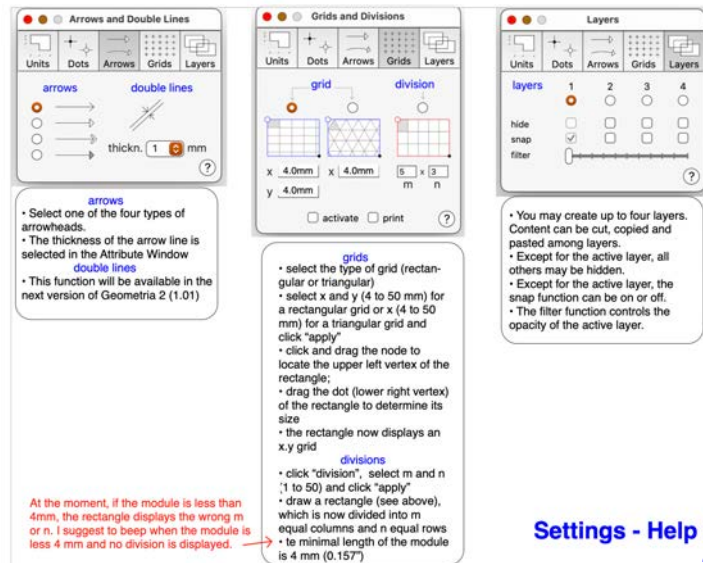
In the previous drawing I sent you (Q1-5.geo) I made some corrections, now it works.

I also encountered a case when I could not remove (delete) the colour of a tile; I painted with white to solve the problem. I will try to reproduce it.

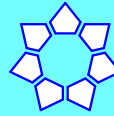


Here the tile indicated with an arrow refuses to be coloured. Why?

2024.12.26



Settings - Help 2.



2024.05.23

.Bonjour Louis,

Here are the two redrawn Settings windows.
I did not quiz the new graphics into the old frames, I enlarged the frames. If this is extra work, I can try to stay within the old frames.

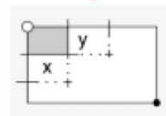
Tell me if it is worth to keep the "delete" buttons. *Pas de problème, je peux facilement allonger la fenêtre.*
Si on veut garder le "delete" il faut remplacer le checkbox par un bouton "ok".

Ciao

I added the new symbols/tools

The previous symbols were to C'est plus joli comme ça en effet mais on n'a plus l'information sur ce que sont x et y.
The values indicated are the default numbers.

min x = 4
min y = 4
min m = 2
min n = 2



Units

Dots

Arrows

Grids

Layers

layers	1	2	3	4
hide	☒	☐	☐	☐
delete	☐	☐	☐	☐
snap	☐	☐	☐	☐
filter	☐	☐	☐	☐



Le slider pour contrôler le niveau de filtration de la couche inférieure.

Grids and divisions

Units

Dots

Arrows

Grids

Layers

grid

division

x

6

y

4

x

6

m

5

n

3

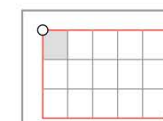
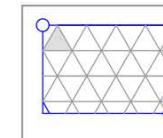
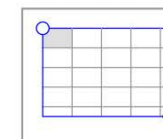
☐ apply
 ☐ print

Il manque le petit "n"?

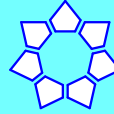
☒ apply Would the check-button be better?

Il faut que ça soit un checkbox, autrement on ne pourrait plus désactiver la grille une fois activée. Peut-être que le mot "apply" porte à confusion. "activate" serait mieux?

The tools:



C'est voulu, que le point soit bleu ici alors qu'il est noir ailleurs?



2024.05.24

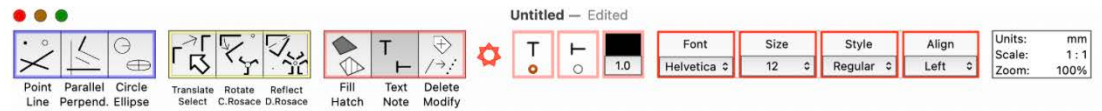
Bonjour Louis,

We have to show the user the active layer number:

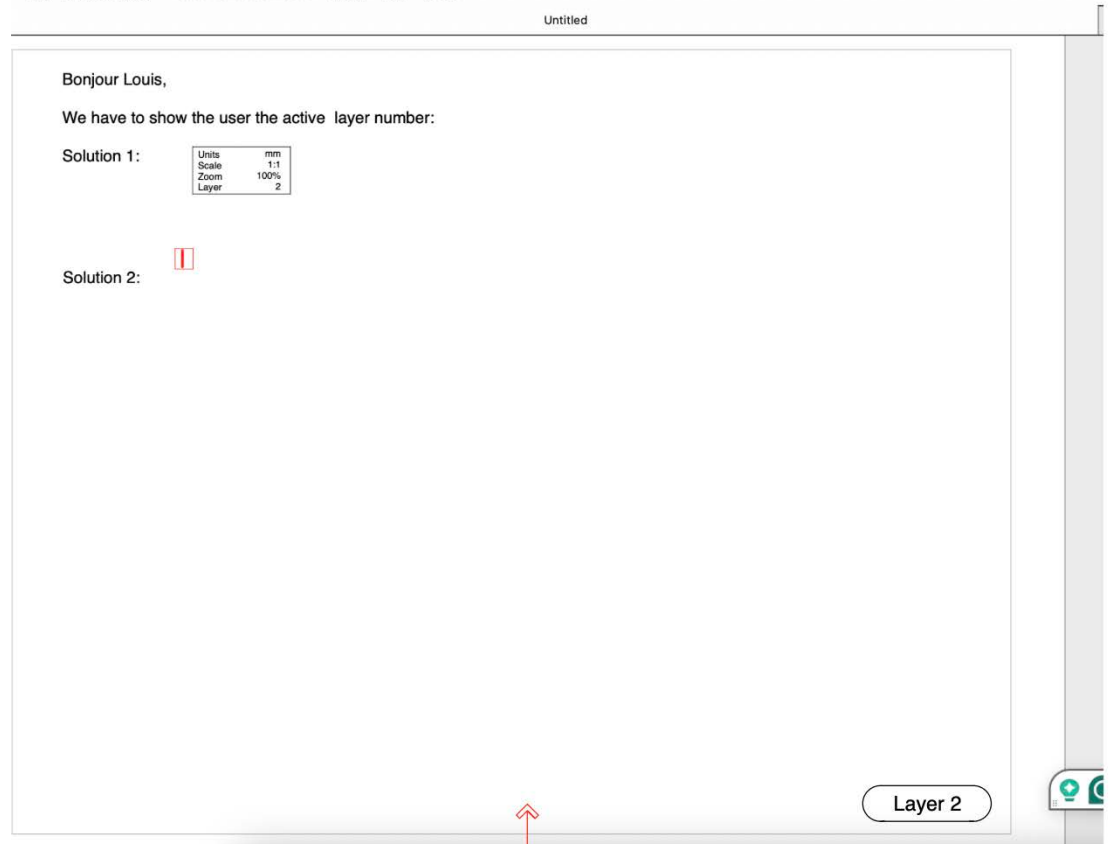
Solution 1:

Units	mm
Scale	1:1
Zoom	100%
Layer	2

is this readable?



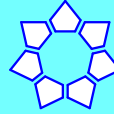
Solution 2:



The layer's number (2, 3 and 4) is displayed in the window

What do you think?

Ciao



2024.10.25

Settings → Units and scale

- The green check button's default image should be dimmed. When you enter data into the "scale" field, it becomes active; you click it, and it turns dim again. As it is now, you click an active check button. Any other solution?

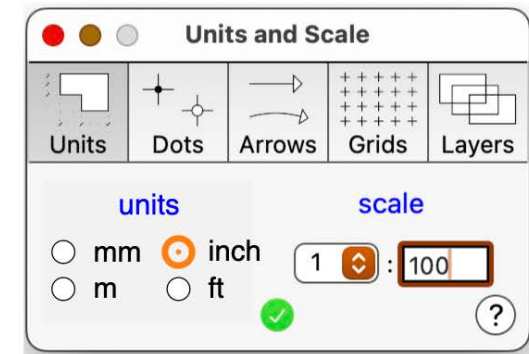
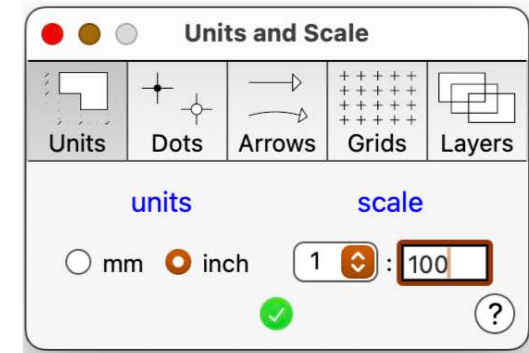
- I think this is a bug:

1. Open a new .geo doc
2. Select "inch" and choose 1:100 in the Settings window.
3. Enter 120 (inches) into PP's "length of segment" field. It will correctly display 10'
4. Enter 80 (inches) into PP's "length of segment" field. It will incorrectly display 80'

- I see a conflict with the selected unit, the Info window display, and the units in PP's "length of segment" field.

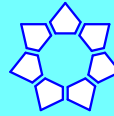
- What do you think of my proposal for the Units tab in the Settings window, shown on the right?

- When you save a .geo doc, the units and the scale should also be saved.



Units:	inch
Scale:	1 : 100
Zoom:	100%

← The Info window will display one of the four selected units. The Option Bar fields do not display the type of unit. (mm, m, ", ')



2024.10.20

Inputs in the Option bar fields (length, distance, radius, coordinates) are in the metric or imperial system.

The denominator of the “scale” field is an open field; you may enter any integer up to 200.

The nominator is a scrolling menu from 1 to 5; this allows you to show details 2, 3, 4, or 5 times the actual dimensions (x:1).

For simplicity, we use the decimal format for imperial input: for instance 6'-4 1/2" is entered as 6.375

Imperial	→	digital scales
3/32	→	1:128
1/4	→	1:48
3/8	→	1:32
1	→	1:12
1 1/2	→	1:8
16 (full)	→	1:1
3/16	→	1:64
1/8	→	1:96
3/4	→	1:16
1/2	→	1:24
3	→	1:4
16 (full)	→	1:1

- Dots and nodes are denoting points, intersections, etc. Dots are small circles filled with black, and nodes are filled with white.
- Choice of diameters: 1 to 5 points

Settings - Help 1.