Chapter 1

Macro-construction

A macro-construction is like a programmed procedure or function receiving as input items from the sketch and it outputs a set of items in the sketch. A macro is built according to a model defined by the user. It means the user first need to do the complete construction sequence in the sketch then ask to DR. GEO to record it in a macro-construction. The macro-construction can then be replayed and saved in a file like any sketch.

To record a construction sequence, DR. GEO need to know the initial items of the sequence and the final – outputs – items. Of course, the final items must depends *only* on the input items, otherwise DR. GEO can not deduce the final items from the initial ones.

Therefore, DR. GEO deduces the logic of the construction sequence and it records it in a macro-construction. Then, the user can repeat this sequence when playing the macro-construction, it only asks for the initial items – same type – in the sketch and construction the resulting – output – items.

> **(!)** Intermediate invisible items are constructed by the macro-construction. They are necessary to reproduce to complete construction sequence and the resulting output items.

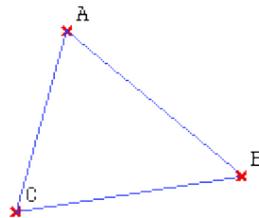To illustrate the use of macro-construction, we take the example of a circle going through three points.

Figure 1.1: The initial sketch

Before creating the macro-construction, the user have to construct the final sketch, it is the model.

1.1 Creating a macro-construction

At this stage, the construction sequence need to be done. The user now asks to DR. GEO he wants to define a macro-construction from this sequence.
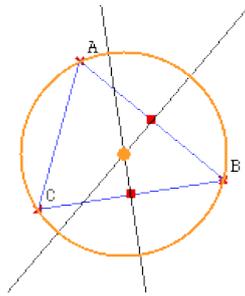
Figure 1.2: The sketch with the final construction

He activates the function `Build a macro` from the toolbar or from the menu `Macro-construction>Build macro`.

In the newly displayed dialog box, the user selects the input and output parameters, the name and the description of the macro-construction.
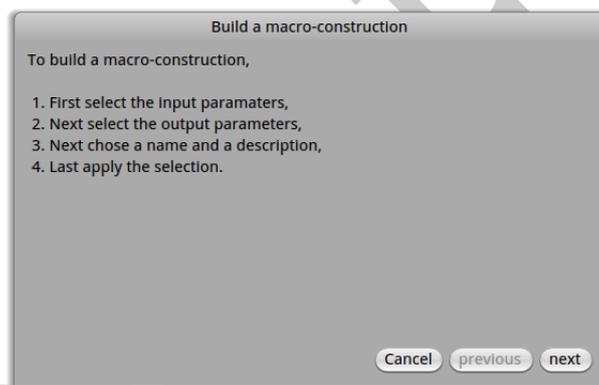

Figure 1.3: Introduction page in the dialog box to construct a macro-construction

The second page in the dialog box lets you select the input parameters. In our example, it is the three initial points. The user just need to go to this second page and he clicks on the three points A, B and C in the sketch. The selected points blink and the name are printed in the dialog box.

In the third page, the user selects the output parameters. In our example, we want the circle and its centre as the result of the macro-construction. The user clicks on these two objects in the sketch, when selected they blink and are printed in the dialog box.

In the fourth page, the user inputs the name and the description of the macro-construction. These information are displayed when the user plays a macro-construction. It helps to disambiguate macro-constructions.

Next, the user validates the definition of the macro-construction when pressing the `Apply` button. He can also step back to the previous steps to adjust the parameters.

(!)   If the selections of the input and output parameters do not match
      (DR. GEO can not extract a construction sequence), the macro-
      construction can not be created. In this case the user need to
      reconsider the input and output parameters. He can step back to
      the second or third page in the dialog box to adjust the choices.
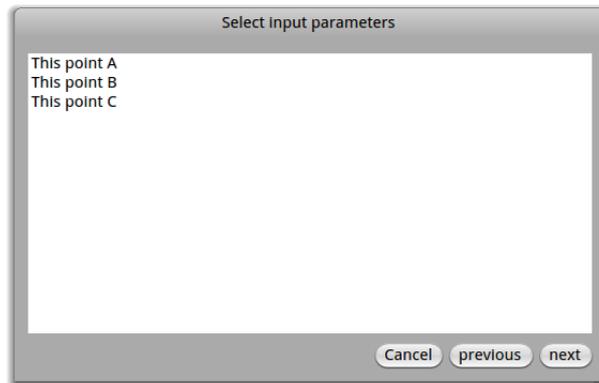

Figure 1.4: The second page, the three points are selected
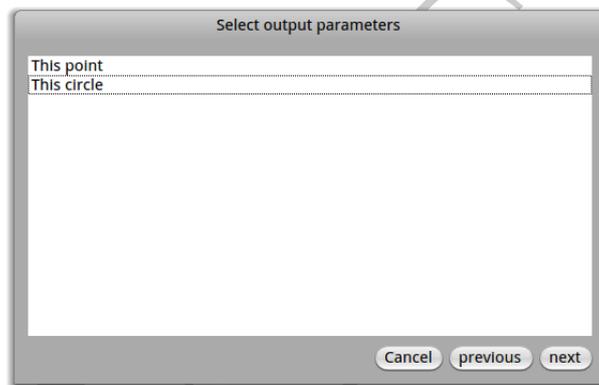

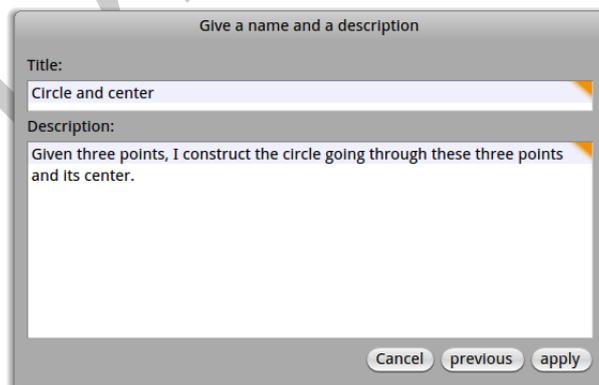Figure 1.5: The third page, the circle and the centre are selected

Figure 1.6: The fourth page, the name and the description of the macro-construction

A this stage, the macro-construction is created and recorded in Dr. Geo. In the next section, we will see how to use it.

1.2   Play a macro-construction

1.2.1   With the dialog box

To execute a macro-construction, the user clicks on the [button] button in the toolbar or select the menu `Macro-construction>Execute macro` in the sketch window. A dialog box describing the procedure shows up.

From this one, in the second page, he selects the macro-construction in the upper list. Once selected, he chooses the input parameters in the sketch. Once all selected, the macro-construction is executed automatically and the output parameters are built and displayed in the sketch.
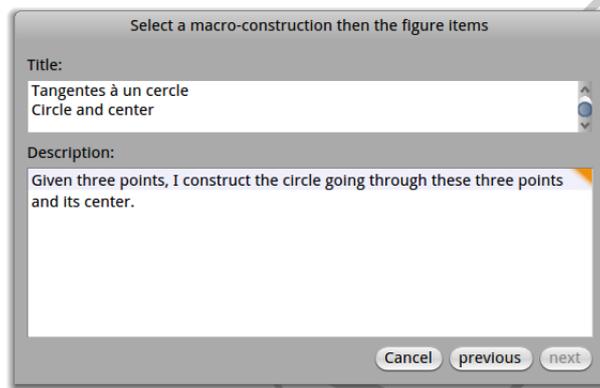

Figure 1.7: The user selects the input parameters in the sketch

In our example, the macro-construction expects three input parameters (three points) and construct a circle and its centre. Therefore, to execute it, you need a sketch with at least three points.

Figure 1.8: Sketch with three points

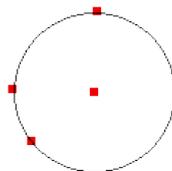Once we feed the macro with three points we get the expected circle and centre.

Figure 1.9: A final sketch with the circle and its centre

1.2.2 With the macro-construction menu

The macro-constructions loaded in memory are listed in the window menu `Macro-construction` . Selecting a macro-construction from this menu, let you execute it directly: after choosing one in the menu, select directly the input parameters in the sketch, the macro-construction is executed as soon as all the input parameters are selected.

It is a dialog-less mode of execution.