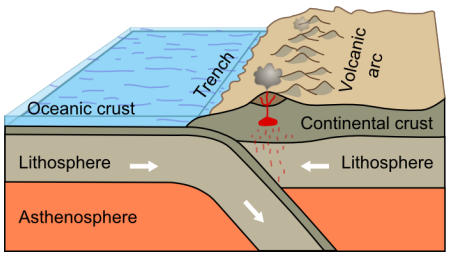
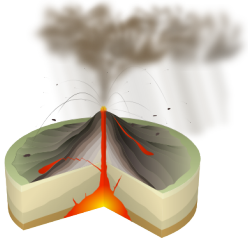
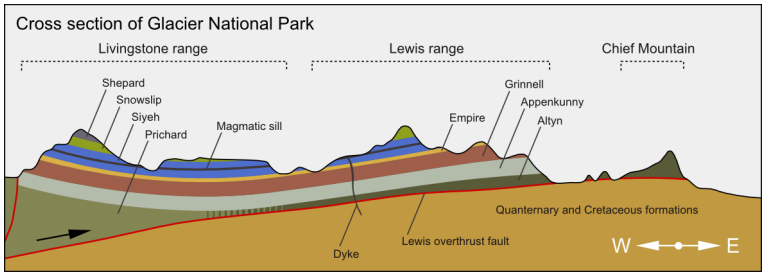


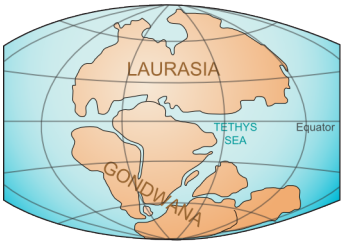


Introduction to vector drawing with Inkscape

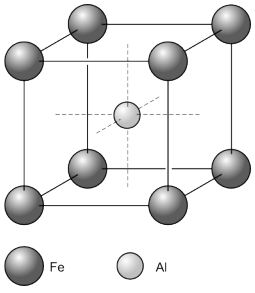
Drawing geological diagrams and cross-sections

Reference handout





TRIASSIC
200 million years ago



© Clare Gordon
School of Earth & Environment,
University of Leeds

Examples
of vector graphics files taken from Wikimedia Commons: http://commons.wikimedia.org
Inkscape version 0.92

16th March 2020

Contents

Chapter 1

Introduction and reference diagrams

This handout supplements the interactive svg exercises and should be used in conjunction with those. The exercises will make reference back to the contents of this document.

In addition there is a full workbook available which covers the same content as the exercises and the handout, but in a more traditional format. This is available separately in the VLE.

1.1 Opening and working through the exercises

Download the **InteractiveInkscape.zip** file from Minerva and unzip it to your M: drive or your own computer using 7-zip › Extract here. **Remember where you have put it! Don't leave it in your Downloads folder but move it to another location on your M: drive.**

There are a series of short exercises to introduce you to the basic drawing tools and techniques in Inkscape. These have been created using Inkscape and are in Inkscape's native svg format which means that as you go along you can do the exercises in the same document as the instructions.

- To get started open **Inkscape**
  - either by searching for **Inkscape** in the Windows start menu to find the copy installed on this computer
  - **or** Inkscape is Open Source so is freely available and you can install it on your own computer (Windows, Mac or Linux) - download from `https://inkscape.org/en/`
- Inkscape can take a bit of time to open. Once it does go to File › Open... and navigate to the folder that you unzipped to open the **01_Introduction.svg** file.
- Once you've opened the document, type **6** to see the full width, and use the mouse-wheel to go up to the top of the page. You should then be able to start following the instructions in the document to complete the exercise.

1.2 The Inkscape window

Figure 1.1 shows the Inkscape window with a diagram already loaded. You may find that the menus and toolbars look different to the screenshot as they can all be customized to your liking and defaults may vary.

Move your cursor over menu and toolbar items - you should see a "tool tip" that shows you what they are.

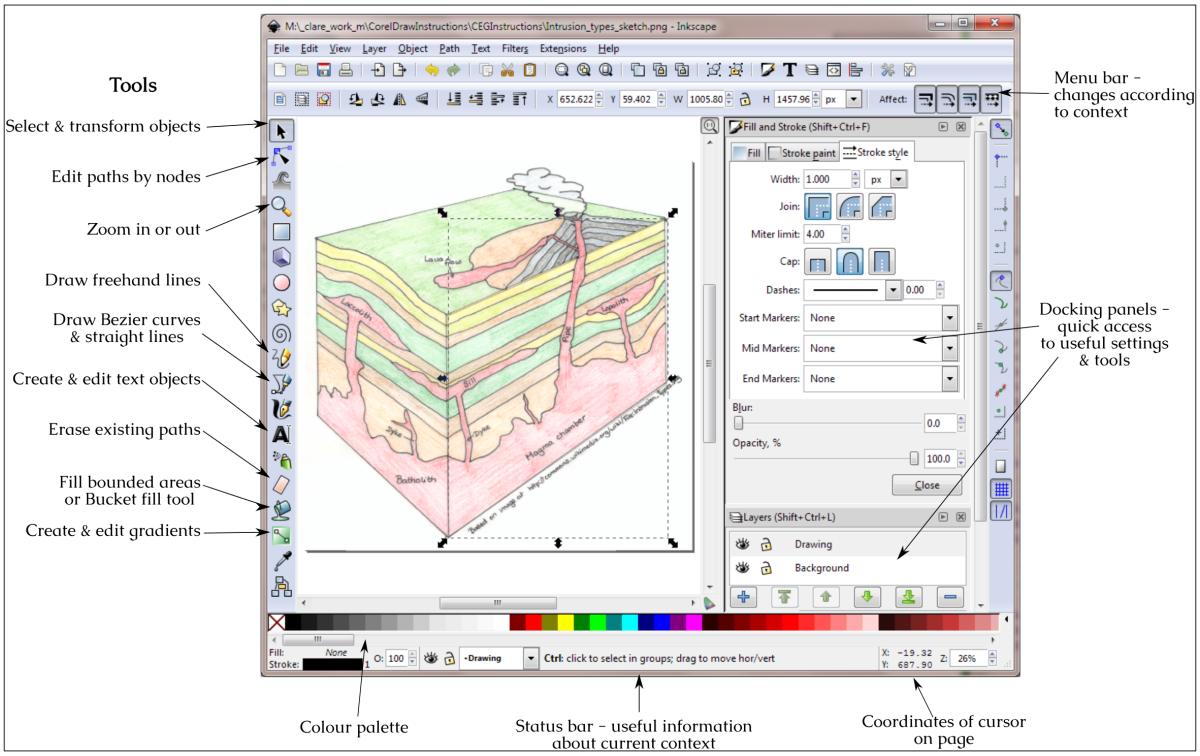


Figure 1.1: The main elements of the Inkscape screen

1.3 Terminology

The exercises in this course will use the terminology set out in figure 1.2 - straight segments, lines, curves, nodes, paths and control handles. We will also refer to **objects**. In Inkscape an object can be any item that you have drawn, so this can includes lines or curves, shapes, text etc.

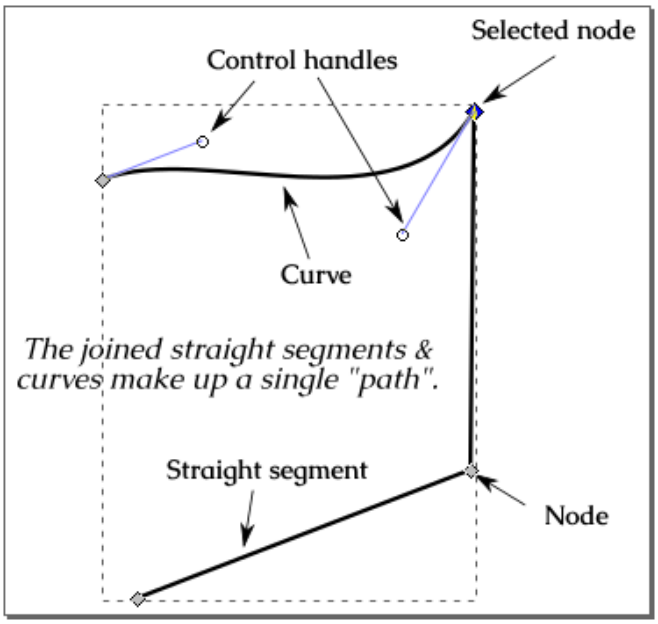


Figure 1.2: Terminology: paths, curves, nodes, straight segments and control handles

1.4 Keyboard shortcut quick reference

Using keyboard shortcuts can really speed up drawing in Inkscape. The commonest shortcuts are covered in the quick reference guide. Try memorising the shortcuts for the tools which you use most often. Reminders of these are included in the exercises.

Inkscape Keyboard Shortcuts

Clare Gordon

The full range of keyboard shortcuts for Inkscape version 0.92 is available from:
`https://inkscape.org/en/doc/keys092.html`
A graphical diagram of keyboard shortcuts is available from:
`http://bit.ly/1WpK6wf`

General shortcuts

Many of these are standard in other Windows programs too.

Ctrl + c ..... Copy
Ctrl + x ..... Cut
Ctrl + v ..... Paste
Ctrl + Alt + v ..... Paste in place
Ctrl + z ..... Undo
Ctrl + y ..... Redo
Ctrl + s ..... Save (use this regularly!)
Ctrl + p ..... Print

Tools

s or F1 ..... select tool
(the black arrow)
Space ..... Toggle select tool
n or F2 ..... node tool
z or F3 ..... zoom tool
(magnifying glass)
m ..... measurement tool
r or F4 ..... rectangle tool
e or F5 ..... ellipse/arc tool
p or F6 ..... pencil / freehand tool
b or Shift + F6 ..... pen / bezier tool
t or F8 ..... text tool
u or Shift + F7 ..... Fill bounded areas tool
(paint bucket fill tool)
g or Ctrl + F1 ..... gradient tool
d or F7 ..... dropper tool

Zooming

+ or = ... Zoom in
- ..... Zoom out
1 ..... Zoom 100%
2 ..... Zoom 50%
3 ..... Zoom to selection
4 ..... Zoom to drawing
5 ..... Zoom to page
6 ..... Zoom to page width

Dialogs/Panels

The key combination will either open the panel, or, if it already open, will move focus to it.

F12 ..... Toggle all panels
(useful if you want to temporarily make more space on the canvas)
Shift + Ctrl + F ..... Fill and stroke
Shift + Ctrl + T ..... Text and font
Shift + Ctrl + M ..... Transform
Shift + Ctrl + L ..... Layers
Shift + Ctrl + A ..... Align and distribute
Shift + Ctrl + E ..... Export to png
Shift + Ctrl + D ..... Document preferences
(e.g. page size and orientation)

Selections

Initial selection will be with the select tool - s - and mouse-click.

Tab ..... Select next object
Shift + Tab ..... Select previous object
Ctrl + a ..... Select all across all layers
Ctrl + g ..... Group selected objects
Ctrl + u ..... Ungroup selected objects

Objects

Ctrl + d ..... Duplicate object
Alt + d ..... Clone object
(clone retains link to original object)
Alt + i ..... Object to pattern
(creating pattern fills from imported image)

Z-order

i.e. which object is below which other objects

Home ..... Raise selection
End ..... Lower selection
PageUp ..... Raise selection to top
PageDown ..... Lower selection to bottom

Paths

Shift + Ctrl + c ..... Convert selected object(s) to path
Ctrl + Alt + c ..... Convert stroke to path
Ctrl + k ..... Combine paths
Shift + Ctrl + k ..... Break paths apart
Ctrl + l ..... Simplify path

Node editing

Shift + j ..... Join selected end nodes
Alt + j ..... Join selected end nodes with new segment
Shift + b ..... Break paths at selected nodes
Shift + d ..... Duplicated selected nodes
Shift + r ..... Reverse path direction

Selecting nodes

Tab ..... Select next node
Shift + Tab ..... Select previous node
Ctrl + Alt + A ..... Select all nodes in path
Esc ..... Deselect all nodes

Change node type

Shift + c ..... Cusp node
Shift + s ..... Make smooth
Shift + y ..... Make symmetric
Shift + a ..... Auto-smooth selected nodes

16th March 2020

Chapter 2

Tracing a diagram

Figure 2.1 shows a completed tracing of the intrusion types diagram (without labels). On the right is an "exploded" version of the same diagram. In this case I started by drawing the outline of the whole "box", then drawing lines across for the horizontal layers and using the paint bucket fill tool to fill in the layers. It was then possible to draw the outline of the igneous intrusion on top of the layers (using the layer manager to make the horizontal layers invisible first). Similarly, the volcano was drawn on top of the green layer at the top. Also note that the layers on the volcano were drawn as overlapping layers too.

This is just one possible way of drawing the diagram. It is up to you to think about how you can keep down the number of lines and "fiddly bits" that you need to draw.

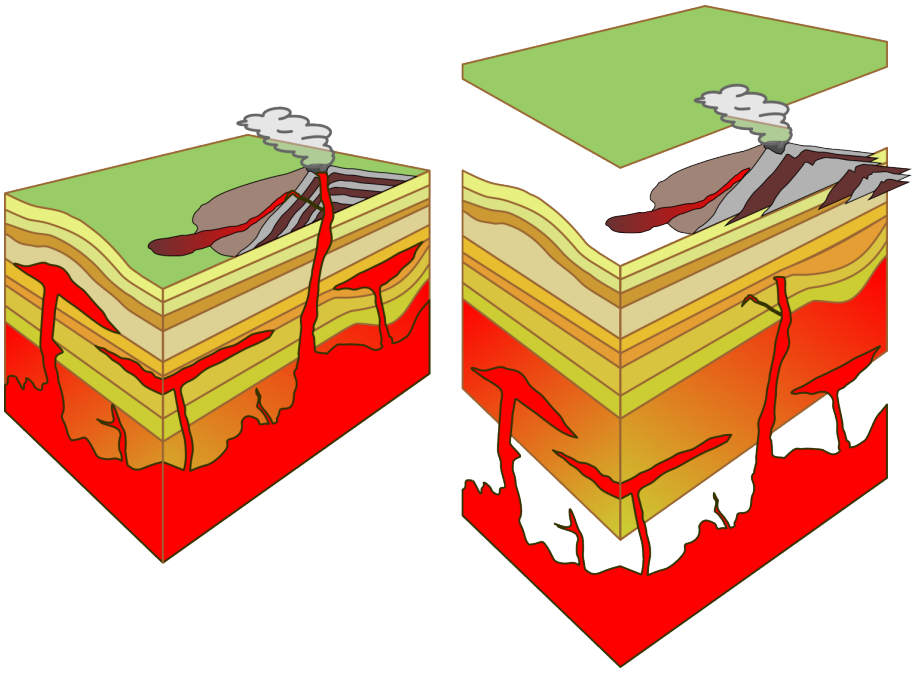


Figure 2.1: Intrusion types diagram - "exploded" to show a possible way of making tracing easier

Chapter 3

Going further with Inkscape

This workbook does not give an exhaustive listing of the tools and techniques available for working with Inkscape. There are loads more things that you can do, so please explore.

- click on buttons and see what they do
- right-click on lines and see what options you are given
- investigate all of the menus and panels further

3.1 Inkscape home page

Inkscape is freely downloadable from `https://inkscape.org/en/`

The Inkscape home page also includes links to a list of features, a gallery, and more learning resources.

3.2 Posters with Inkscape

In these exercises you have used Inkscape to trace diagrams and cross-sections and you can, of course, use it for sedimentary logs and other geological images. But you can also use Inkscape to produce well laid out posters.

At various times in your academic career you will need to produce large, e.g. A0, posters combining photographs, text and diagrams in one large layout. Inkscape is ideal for this. Most of the posters around the School will have been produced in a vector drawing package such as Inkscape or CorelDraw. You can import raster images, such as photographs, create diagrams, add text, and move and align all the content blocks. You can also add formatting, such as coloured backgrounds or outlines. Next time you have a poster to produce, use Inkscape.

There is a short pdf tutorial at `http://bit.ly/2JdinRi` which gives basic suggestions.

See some detailed instructions[1] for creating a fancier A0 poster in Inkscape in a blog post at `http://bit.ly/2HduNF7`

3.3 Inkscape for geological illustrations

The web page from University of Otago at `http://bit.ly/2m3po8A` provides some resources for producing geological illustrations with vector drawing packages, including Inkscape. The most useful is probably the sheet of "patterns" in the USGS Inkscape pack. Full instructions are on the page.

[1] Last visited: 10th May 2019.

3.4 General tutorials on the web

If you're trying to do something in Inkscape and think that there ought to be a better/different/quicker way of doing it, the chances are that somebody else has already though that, and maybe produced a YouTube video, or written a blog post or tutorial about it. So formulate a search (sometimes the hardest part!) and see what you can find.

If you want ideas for how to create a particular effect try searching for "Vector drawing tutorials" on the web. There are loads of ideas which show how graphic designers produce professional looking diagrams. A cartoon dinosaur [2] might not go down terribly well in your next report, but some of the techniques involved could help you to draw a clear diagram of a thrust fault, for example.

Some tutorials may also show you ways to do frequent tasks in a much quicker manner, too.

Tutorials on the web may refer to Adobe Illustrator or CorelDraw rather than Inkscape, but the basic techniques should still give you ideas once you have some experience with the program.

- **Inkscape Tutorials** - `https://inkscape.org/en/learn/`
- **Design Tuts+** Inkscape tutorials - `https://design.tutsplus.com/categories/inkscape` - you need to register to see some tutorials, but many are free and open.
- **goInkscape** is a blog with some really good tutorials - `http://goinkscape.com/` An example is the one on how to draw a snowflake (`http://goinkscape.com/easiest-way-to-draw-a-snowflake/`). You may never need to draw a snowflake, but the techniques demonstrated could be really useful for other diagrams.

[2] Vector Tuts+, How to create a cute cartoon dinosaur: `http://bit.ly/1S2gVcF` [Last viewed: 4th April 2016]