MAP MAKING

For professionals and absolute beginners
a STEP-by-STEP guide using Map Maker 5

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APPENDIX 6 Mapping/GIS software (a brief overview)

In this course we use the software Map Maker 5. And for good reasons: it is the most user friendly package around and quite possibly offers most, most, if not all, any novice, occasional, fulltime map maker or Geographic Information System (GIS) user would need.

Disclaimers

There are more packages to consider and since we are map makers, let's '*put these packages on a map*!'

1. Because there are so many different packages and we only have limited space, it has got to be a small scale map, like a road map. The nature of a small scale map is that some features, like main roads, are exaggerated to make them very clear, while other features, like buildings, are displaced to leave room for, let's say, wider road lines. And finer detail...? Well, that is left out altogether. That is all OK, since it is just a small scale map and serves a specific purpose. This simplification process is called 'generalisation'.
Since this is a map making course, we will apply these 'generalisation principles' to 'map-out' some software options knowing we fall short on finer detail.
2. The second disclaimer is this: I have no commercial interest in any of the mentioned packages. I am an independent professional map maker/cartographer and GIS user. I simply need good and efficient tools to earn a living. As such I keep an eye open for good tools of the trade.
3. The third disclaimer is this: I have tested a number of packages but most certainly not all of them.

Analogy

To start digital map making I often hear a statement like: *"I* <u>only</u> *need to draw a few lines on a map and print them, that is all, no bells and whistles, for me that would be too complex, I don't need that anyway".*

Sure, that is simple enough. And easy-to-use software will see you through it in no time. It is an easy process. We all like to do that, fly from A to B, in a simple, elegant and efficient fashion:

But <u>guaranteed</u>: *no sooner* are we airborne (and one realises how easy it is) and then...
the **Farm manager,** also using the software says, "yeah, great, I can do this!" Now I *also* want to spray my crops...

After those skills are mastered (it is easy) the **Forester** has some additional specific needs:

The **Marine Biologist** or **Ecologist** having learned these easy basics, now wants to approach this map just a tad differently:

After the first maps are made, the **Land Agents**, the self-employed and those multi-tasking will soon want some serious oomph:

whilst those working in larger organisations really need something big to transport bulk data:
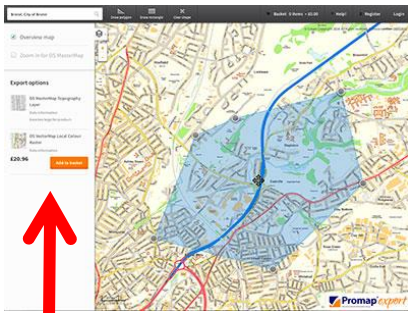

...by now it has become a *three* man job to fly or land the jolly thing...!
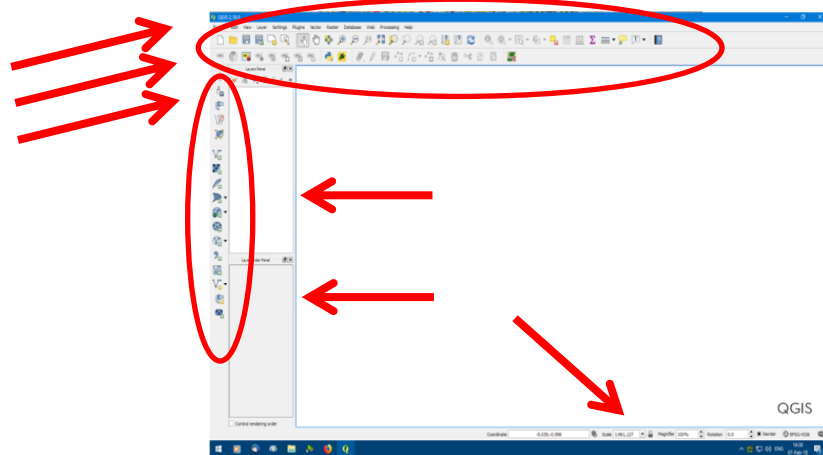
The functionality of these aircraft is often reflected in the increasing number of controls in the cockpit:

Translating this back to software interfaces it can range from something as simple as this:

...to something more complex like this:

As said: this is usually how it goes: "I **_only_** want something simple...", and as soon as it is mastered, more is required...

Naturally each of these aircraft has their strengths and weaknesses and each comes with a different price tag. So how do we narrow down what we really need and want?

Let me 'generalise' these choices, and simplify the matter. Let's squeeze the map making/GIS software packages unreverentially into only two groups:

- One-trick ponies
- Industry Standard packages

One-trick Ponies can be very efficient, slick and easy to use – but offer little flexibility.
Industry Standard packages offer immense flexibility but there is more to learn.

a One-trick ponies & horses for courses – considerations:

<u>Import-Export</u>
In the early days of working with digital map data (and computing in general) the software packages often tied the user into their brand and way of working. *This is in general no longer the case*. There are industry standard file formats and *any* good package will be able to import and export data, making use of these standard file formats. To create maps and map data/layers is a time consuming activity and if a particular software package does *not* allow you to export your data to these industry standards (ArcGIS at the least) I'd be reluctant to use it, however tempting it may seem.

<u>Security</u>
Although most packages will allow exporting your data to be used in another package, a new phenomenon is emerging. Some packages are web-based. The user can no longer physically download and install the software on their PC and in some cases the data which you draw lives somewhere in 'the cloud' on their servers. And that means *you are tied into their regime*. Furthermore, anything digital can be hacked, no matter how big the firm is and no matter how well the security measures are advertised (think of incidents with Google, Facebook etc.). The bulk of produced map layers may perhaps not contain super sensitive data, but think of the time it took to create them, and then you don't mind being dependent on an external supplier to access your data...?

<u>Costs</u>
The cost of using such online/on demand software seems small and can, for example be charged per print, reducing the cost to a bare minimum... or so it seems. However, you will soon find out that in fact you need a lot of prints, not only to make a high quality map but also in daily use. And then the costs of using these seemingly cheap packages and services mount, little by little, bit by bit.

Quality of output
The map is often your 'visual-end-output' of a costly and/or time-consuming project (like a field survey which took days and cost a fair bit). Or it *may lead* to a costly and time consuming new project: sale of land, grant applications, planning permissions etc. In other words, the map is a key component in the presentation of your information. If you fail to present it well your project may miss its aim.

The creators of these on-line packages are often keen to promote their services and so their names and logos may show up clearly on your work. Furthermore, drawing a digital map is more than just some basic colours or pattern fills. You are communicating valuable information on your map and so you need control over its appearance. 'One-trick pony' software often offers easy access to a few default and standard lines and colours – but that's it, little creative/personal control.
Bear this in mind when producing map output for your valuable and specific project.

Ease of use
These 'One-trick pony' packages can be (or should be!) very efficient and most user-friendly. That is to be expected because they only do a few things so there is little to do and learn. But from experience I know that <u>as soon</u> as you are over the initial hurdle of the complexities of map making and you know how to draw a few lines with these basic colours and tools, I repeat, <u>*NO SOONER*</u> have you learned that and you will ask, "can it also do this…?", or, "I want it to look like so…". And then the answer is, "no, it can't be done because this is a basic package". And then you start looking for other software and waste more time and money to find something that does work for you.

Dedicated packages
Then there are mapping tools which are developed by service providers who operate in a specific 'non-map-making' market and realise that offering mapping capabilities enhances their core product. Think of forestry management software, terrier software, property maintenance software etc. Such mapping tools are often, again, easy to use as they are an efficient match for their core activities. To be able to program a smart administrative/management database package is one thing, to develop a proper mapping/GIS package is of course a totally different ballgame. So, mapping software like this might be efficient and practical however, it too is, in a way, a 'one-trick-pony' and is no match for software which is specifically developed for mapmaking/GIS use.

b Industry leading packages
On the other end of the spectrum are the big serious mapping/GIS software packages. There are quite a few about, and we will only touch upon the most well-known:

ArcGIS, QGIS etc.
The undisputed market leader in GIS software packages is '**ArcGIS**'. In hot pursuit we find rival packages like '**MapInfo**' Bentley's **MicroStation**, **AutoCAD** etc. The first two are like Coca-Cola and Pepsi, they have conquered and divided the world between them. Big, formal organisations are making use of packages like these.

These packages rule the world because they are good, are well known and are a standard.
> **If**, for example, you ever need to dig open a road to replace a cable and want to coordinate this with all other utility services, have all their data on your mobile and have it projected in your Google Virtual Augmented glasses so you can see in 3D where the cables are whilst looking at that road,
> **then** these are the tools which offer the integrated app and functionality to do all that. Mind-boggling and spectacular.

But like the aforementioned sugar soft drinks, though they may rule the world, it does not mean they are all that healthy for you too.

Packages like this come with a hefty price tag. 4 digit numbers for a single PC licence followed by annual licence fees. An office license will have a price tag of 5 digits + annual licence fees, and then it is not uncommon you need an extra module to do this and another to do that…
Because they serve the entire world with all its GIS needs, the learning curve to master these excellent tools is steep indeed.

ArcGIS interface: (look at the impressive row of tool icons in the top row)
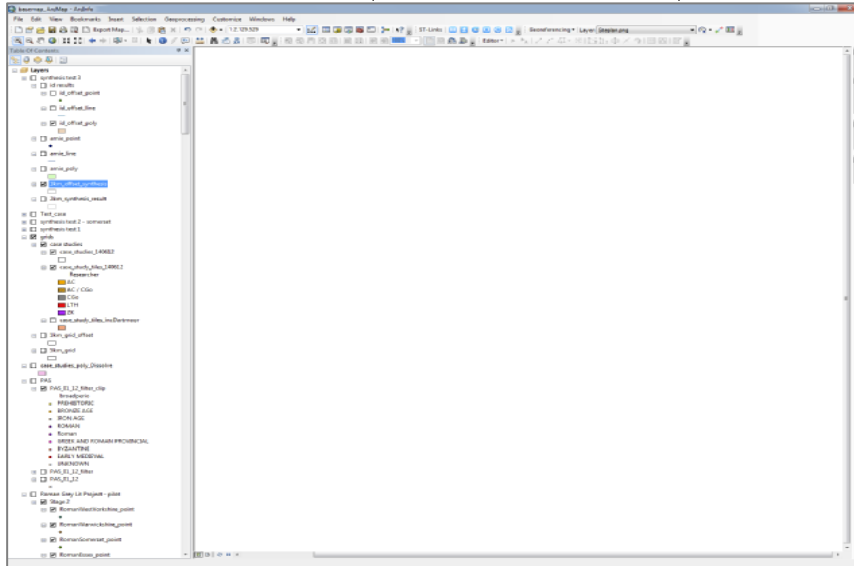
In short, *these are tools for people who are happy to spend money and have the time to learn.*

The times they are a changing...

But even amongst the big formal corporate users things are changing. For example, the Norwegian *National Mapping Agency* which serves up their maps through web-portals to a range of other organisations and users, have opted for 'Open-Source' software to provide these services.

'Open-Source' software is, of course, free. It is programmed by a collective of enthusiasts, professionals and/or hobbyists. We all know about 'free' software which we can download from obscure webpages covered in advertisements, so that we first download and install 3 packages we don't really want. We end up with a polluted computer and eventually discovering the free software which we thought would do the trick does not quite deliver as expected. And yet, here we are, Open-Source software in use in a very formal and secure, national institute. Enter:

QGIS

'Quantum GIS' saw the light of day as recently as 2002 and became Open-Source in 2009. Initially it was basic and not all that impressive. However, 10 years have passed and the GIS community has pushed it to spectacular heights. It now is even becoming a serious rival to the likes of ArcGIS!

QGIS is a totally free and excellent package with functionality to make your head spin. And that shows in the interface, the icons and menu settings one needs to learn how to apply all this wonderful functionality.

This is an excellent package particularly for those who enjoy nuts and bolts and appreciate a challenge.

Others well worth mentioning

Then there are packages which have found their way in to the mapping/GIS world through the graphic design sector. Graphic designers and artists can draw. And therefore they can make beautiful looking maps, but not necessarily *accurate* maps! The world leading graphic design package is Adobe Illustrator. However, there is more involved in a good map than just stunning graphics. And so an 'add on' package was developed by another company (Avenza) which now serves the GIS world in an impressive way: **MAPublisher**. It is based on Adobe Illustrator, and that runs on a *monthly license*, two packages in one, a lot of functionality, a lot to learn.

OCAD is a well-known mapping package in the orienteering world (hobby). **Global Mapper** is particularly strong in using Lidar Data.

Global Mapper interface:
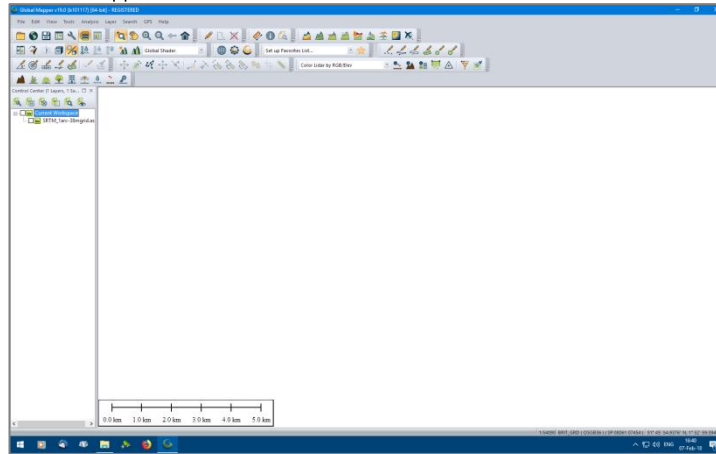
And so the list of good packages can go on and on.
Plotting their basic functionality on our generalised road map – scale 1:250,000, we can note that (more or less):

- Nowadays all of these packages do more or less the same tasks. The core difference is that by their initial design some do specific things more elegantly than others.

- Furthermore, an important thing to realise is this: GIS packages are often designed to manage, analyse and work with existing data. To actually draw and make new maps is something different.

Then there is...

Map Maker 5

Map Maker 5 is the software which we use in this course. It was developed in the mid-90's for a particular target group: those working in international development. It was recognised that good maps are often a foundation brick for proper sustainable development and that, at that time, digital tools were not available for or those working out in the field.

The software had to be super user-friendly - after all, not everyone is a GIS expert. It had to be affordable and practical and had to have most tools a professional out in the field might need.

You may find it hard to believe, but as a professional map maker working across the board, serving many very diverse clients, making simple maps and working with complex and huge data sets: in the last *20 years* Map Maker has not let me down once! It spans it all, taking you with ease and in a most user-friendly way from A to B:

Map Maker 5
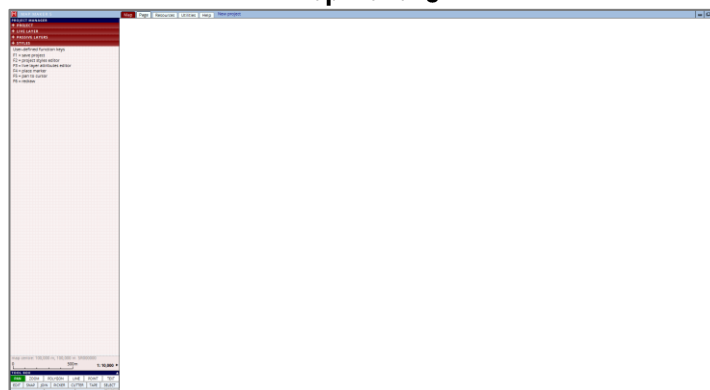
Map Maker 5 interface

The cost is little, probably as much as filling up your car a few times. It is a one-off payment, no dreaded accumulating monthly subscription fees (check out their website: www.mapmaker.com).

Map Maker Version 3.5 became very popular worldwide because of its impressive set of tools. It has always operated on the cutting edge of what technically was possible. And, speaking about 'cutting edge', the seemingly simple 'cutter' tool was such an example. It was in MM right from the beginning (mid-90's), ArcGIS only introduced a similar tool in about 2012! That is an impressive head start.)

The interface has always been most user-friendly whilst its applications have been formidable.

For example:

- I have trained for example land owners and agents; farmers; foresters; doctors; ecologists; marine-biologists; government officials and various hobbyists.
- I have implemented Map Maker 5 as a very efficient mapping tool / GIS at many estates and land management firms.
- In the early years, about 1800 farmers in Central America used a free Spanish version of Map Maker.
- In 2016 I was told that 95% of all government organisations in Ghana who used GIS tools were using the Map Maker software. That is impressive. Don't dismiss this thinking it just being a developing country, it is not. They have online map based, planning application web-portals etc.

It is impressive that Map Maker can serve this many different users.

That was version 3.5. We are now looking at version 5! Again, cutting edge. For example, I have not yet seen the super-efficient 'brush tool' functionality in any other GIS package yet. In terms of **user-friendliness** it has left ArcGIS and QGIS far behind.

As a professional, I need efficient tools and therefore I use Map Maker. I have found that working with small or super-large datasets or complex GIS/map making work, Map Maker 5 is equal to, if not outperforming, other packages.

Map Maker has remained true to its initial concepts: it is easy to use for anyone and yet it covers all the tools we need today to draw, analyse and manage maps, both for the occasional map maker, the full time map maker, as well as larger organisations.

Map Maker 5 updates & maintenance

Once installed the software runs for 30 days with its full functionality. After that it reduces the functionality to a pragmatic set of core tools.

The software is continuously being improved, expanded and enhanced. Registered users who want the most up-to-date version of the software, should periodically download and install the latest update free of charge. There are no set times for such releases, they appear as they are completed. In the Help tab one can see if there is a new update available, clicking on that notification will download and will start up the installation of the latest version.

Map Maker 5 and SHP files

Because ArcView 'rules the world', Map Maker 5 works seamlessly with SHP files. One can read and write to this file format without the need to go through an import or export routine.

OK, although it is a brief generalised software overview, it is quite a thumbs up for Map Maker. I am an independent map maker, as soon as there is a package on the market which is better and more efficient (I need to make a living with it) I will consider changing my preferred tool. For many years Map Maker has been the best choice for me and many of my clients, I can recommend it.