

Orienteering as visual communication

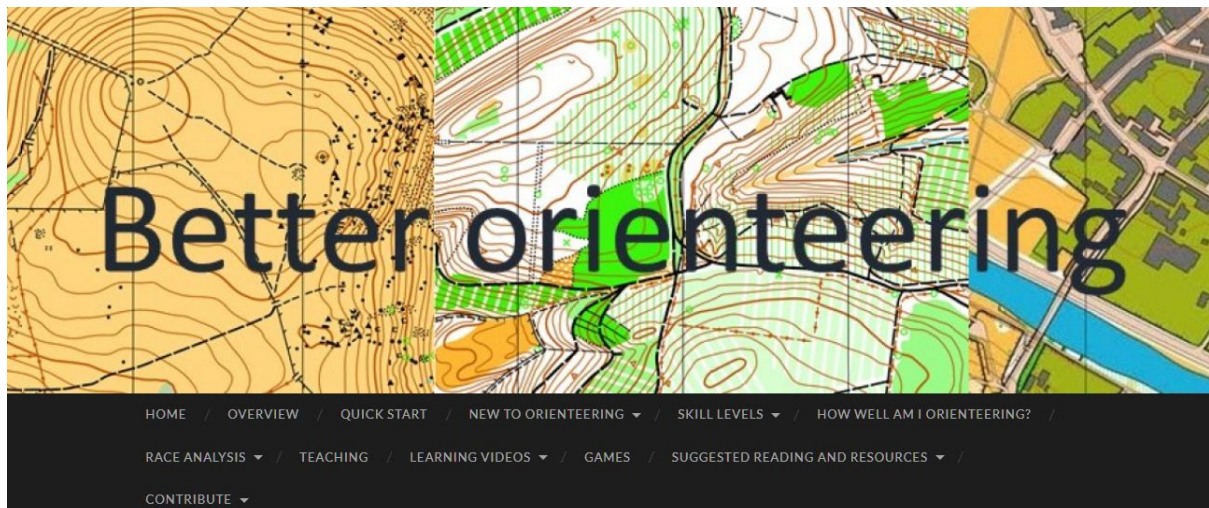
Orienteering is a visual communication task. We read the map, visualise what we will encounter and move through the terrain seeing the landscape with a very specific set of eyes. It takes time to develop all those skills. Good design and effective graphical communication play an important part in making all that possible.

In this article I am going to briefly explore some of the elements of visual processing and graphical communication that make up orienteering and relate this to the approach that has been taken to explaining orienteering on the **Better Orienteering skills website**. The key concept has been that *visually based skills like orienteering navigation are best explored in a visual way*.

This means that the first step into explaining orienteering at each level is graphical summaries with very few words on, followed by videos that show how to put orienteering skills into practice. Only after that is there much written discussion. We need words, but many elements of visual information processing are better shown or illustrated than talked about.

e.g. Graphical summary – Videos – Discussion – Links to more information

There is much to take on in learning orienteering, so the explanation on Better Orienteering is broken down into different skill levels from beginner, through basic navigation, to intermediate and advanced.

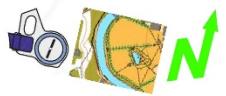


<https://betterorienteering.org/>

Some examples of the Graphical summaries on Better Orienteering

Better Orienteering

Basic Navigation Routine




Keep the map lined up to north


Know the scale, tune in to it

scale 1:10000, contours 10m

Thumb on map where you are




Exiting control




Every leg has 3 parts

Route to Attack Point




!

Finding control



v




Break the leg into sections:

Red = tricky/ slow

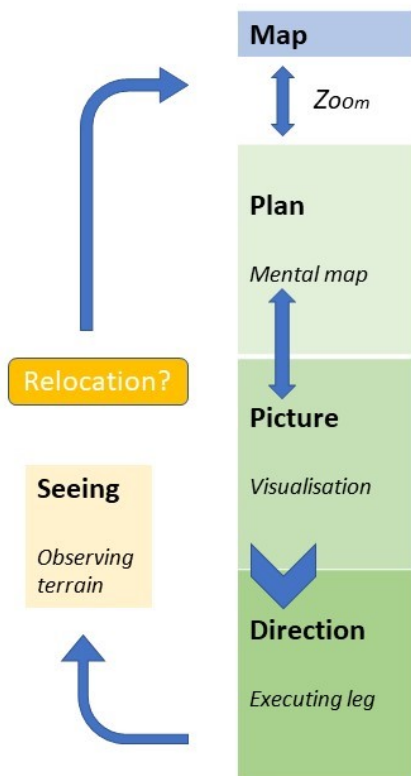
Amber = easier/ steady

Green = simpler/ quicker

Go steady to No. 1 and get into the flow

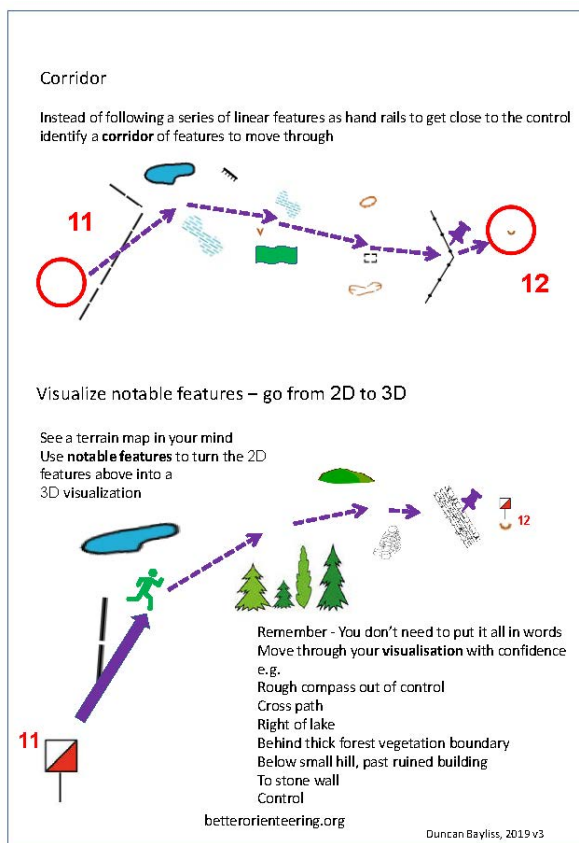
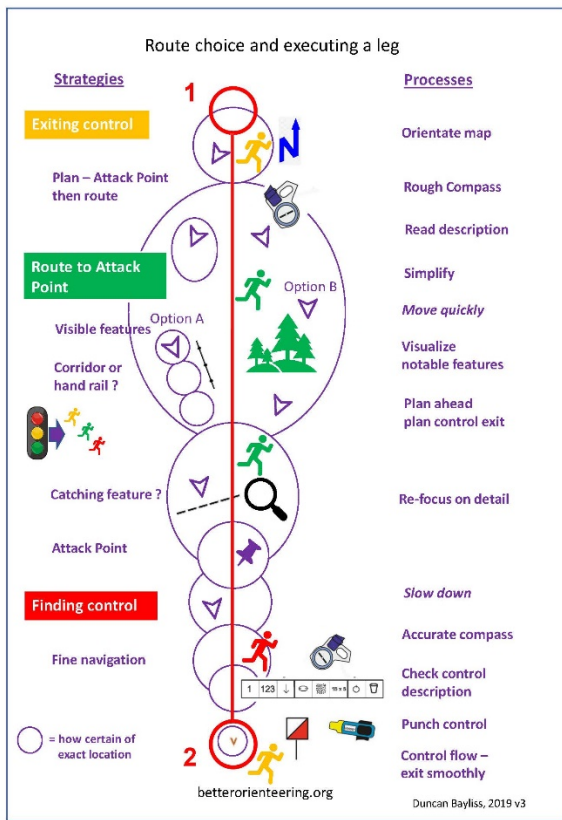


Plan Picture Direction



Plan, Picture Direction draws on a model by Kris Jones integrated with other elements of navigation on Better Orienteering, Duncan Bayliss, 2019

Examples of more detailed examination and discussion of the orienteering process



Videos – demonstrating skills in practice



Maps – information dense graphical communication

Maps are the most information dense form of communication we have. They can be read in all directions, in many layers and also selectively for different purposes. Orienteering maps are especially information rich, but they are a very specific view of the landscape. They are concerned only with what the runner sees when moving through the landscape (some land shapes are included, but not every detail) and how they will experience that process of movement (dense woodland, runnable woodland, crossable marsh, uncrossable marsh).

It takes time to become good at translating the map symbols into a picture of reality. The orienteer builds from experience what we could call in design terminology, a pattern library of terrain elements, to match to features on the map. Those elements are associated together in sets relating to the overall type of terrain and country or region you are in. The better your terrain library (Gueorrgiou, 2018) the easier it is to make a good estimation of what a particular symbol will look like in different terrains.

So, orienteering maps are a visual language to communicate what terrain looks like to orienteers as they move through it.

There are other experiential elements of orienteering knowledge that must be learnt by doing to become a good navigator. The orienteer learns to place themselves in a picture or visualisation of the landscape in 3 dimensions. They must develop and fine tune a sense of distance between features and how they will be perceived from the runner's perspective when moving through the landscape, in terms of visibility and in relation to one another.

One of the problems for people early on in their orienteering development is the tendency to see features on the map in a static relationship to one another, rather than in a dynamic relationship which changes from the runner's perspective with movement. Orienteering maps make most sense when you are moving. When you stand still you may see too much detail on the map for your needs

at that moment, or you may not see some features in the terrain that will suddenly become visible when you move on.

As their visualisation improves, orienteers become aware of many more elements of the landscape around them simultaneously and how they will be experienced as they move through them. Some are more easily spotted or interpreted while running than others.

Orienteering maps have been on a fascinating journey, becoming more accurate, more detailed and changing in scale to allow more detail to be shown; 1:20000- 1:15000 – 1:10000 – 1:7500. Contours were originally interpolated by eye from national land survey mapping, then derived from photogrammetric plots and are now taken in immense detail from Lidar that sees through the vegetation much better to the ground surface, but a good mapper still interprets those shapes to take account of the runner's eye perspective.

Mats Strong discusses this and illustrates it very clearly in a video by O-Ringen TV *How have maps changed since 1965?* <https://youtu.be/OUt9wuYIOe0>

Interestingly, as maps have changed so has orienteering technique, particularly for very experienced orienteers and elite competitors. The increased detail allows a much finer technique with less informed guess work and less need (or no need at all) for counting steps.

Orienteering map symbols have been revised several times and have become clearer, not just individually, but also as a symbol set overall. The weighting between symbols is now beautifully balanced so that the eye can switch rapidly from contours to water features, to vegetation. The balance of line thickness, colour and density makes this possible. The UK's Ordnance Survey 1:50000 map symbology is another great example of this fine balancing act.

I think many people will agree that there is more work to do on making urban maps, especially, more readable. In forest, potentially all the symbols on the map are relevant depending what you are doing at a particular point in terms of navigation. With urban maps it is still the case that it can be too easy to miss an underpass or narrow gap which could make all the difference to route choice and much of the other detail on the map may simply not be used at all. I know that is a bit of a contentious claim, but there are certainly still some more improvements that will come with urban maps and readability.

Part of the difficulty is the tension between the fact that some shapes on a map are shown as geometrically correct representations of how those features in reality such as the shape of a building or a piece of woodland surrounded by grassland, whereas others are shown by symbols that are nothing like the size of the actual feature being mapped, such as the brown **V** symbol for a pit, or the width of a path. Some critical information such as narrow passages that exist between a fence and a building might be better shown with a symbol for the passage on the map which of course will be larger than the actual width of the gap between the building and the fence in reality. Otherwise the gap remains very small and orienteering becomes a test of eyesight not just navigation ability.

There is also a continuing tension between the desire for a universal symbol set and the need to show the peculiar features of different types of terrain. There is no easy answer to it, but it is certainly the case that the gap between what is perceived to be shown by the map symbols or clusters of symbols and what the runner actually sees is bigger in some terrain than in others. In the

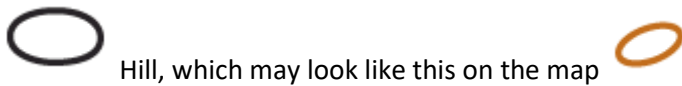
UK quite a few people feel that the symbols are optimised for Scandinavian terrain so there are slightly more issues in other places.

The way clusters of features come together also affects the ability to interpret them from the map. The notorious example being lines of small crags next to a path. Both might be distinct and need including but can be hard to separate when viewed at speed while running.

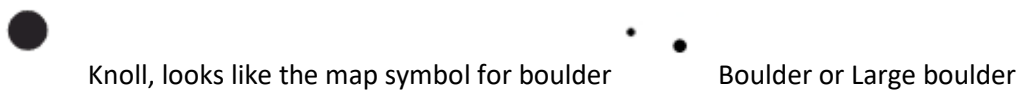
Control descriptions – the second symbolic language of orienteering

The other major visual symbolic language of orienteering is control descriptions. They are symbols rather than a script, which has great advantages because they work world-wide and are easy to read upside down or in any other orientation. However, as they are at present, they blend several forms of symbology rather uncomfortably to my eyes.

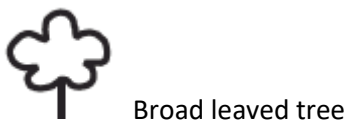
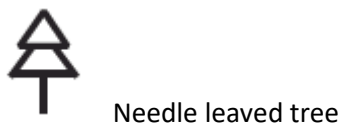
Some look like the map symbols they are related to; there is a direct correspondence.



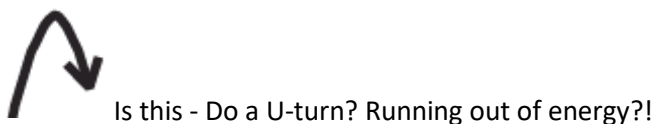
Whereas other control descriptions look like another symbol on the map



Others are pictograms of the feature in the terrain e.g. a conifer looking like a conifer.



But -



Some are abstract, but not necessarily related to any overall symbol set that people might be familiar with from elsewhere.



Erosion gully which on the map might look like this



Open land

Some are intuitive, but others aren't. e.g. the "flower" symbol for out of bounds.



Out of bounds

It evokes a flowerbed, but there can many other types of uncrossable land. In that case borrowing and adapting a symbol from road signs and buildings, which have become fairly standardised across Europe might be more intuitive. E.g.



No entry – this would still work in black ink

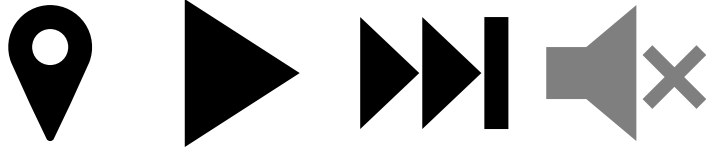
(For convenient summaries of control descriptions and map symbols see:

<https://www.maprunner.co.uk/>)

At one level it doesn't matter because whatever the symbol, once you know it and use it, you see past the symbol to the feature it is telling you about. Egyptian hieroglyphs, to my eyes at least, ended up with a similarly muddled set of symbols, some of which are very pictographic and fairly obviously correspond to particular objects or ideas in the real world, but others correspond to syllables or sounds and the result was famously difficult for archaeologists to puzzle out.

Orienteering control descriptions symbology will probably be further influenced by other symbol sets we all encounter, and which become part of the visual language we use on a day to day basis through smartphone screens, computers, product labels and road signs for example, which have become more standardised across Europe.

Here are a few quick examples of everyday symbology that we have become very familiar with. Very simple abstract or abstracted shapes can become powerful symbols.



Symbols can be intuitively understood, especially from context



Meaning touch here

I must emphasise that these are not new observations about control descriptions, they have been aired in articles in CompassSport and other orienteering magazines by various people over the years (apologies for not being able to find any of those articles to reference here). No doubt there will be further evolution of the control description symbols over time. There is certainly scope for a more consistent logic to the symbology of orienteering control descriptions that could make them easier to intuitively understand and remember for people entering the sport.

What does this all mean for teaching/ coaching/ learning/ communicating orienteering?

I am particularly pleased that in creating the Better Orienteering skills website, many orienteers have seen the potential for improving how we explain orienteering and help other people get into the sport and get better at it. The key ingredient has been to go from a static textbook to an interactive website with simple, very visual summaries and videos.

The structure for learning orienteering skills used by Better Orienteering is:

- A short summary that takes a minute to read and provides the framework for understanding and remembering the skills.
- Videos follow and show the skills in use – now you can see what it is all about.
- The skills concepts are then related to the model – Plan, Picture, Direction, at varying levels of detail depending on the skill level being introduced.
- Discussion follows to help with any parts that were not clear or where more detail is needed.
- Links are given to more examples, practice exercises, more videos etc to develop understanding further.

When a set of skills are explained well, the explanation looks “obvious”. The right solution looks simple but getting to that simple solution can be quite a long creative process!

There is also a downloadable web-linked summary which is very graphical, keeping to the principle of communicating the visual task of orienteering visually as far as possible.



What is included ?

- New to orienteering
- Basic Navigation Routine
- Plan, Picture, Direction
- Skills Tool kit
- Better Orienteering Navigation model
- How well am I orienteering?
- Race analysis

Click on a heading to go to that section

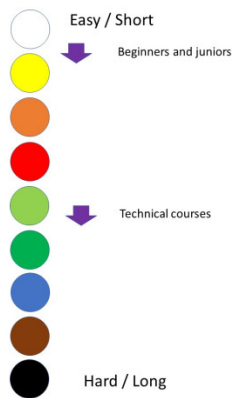
Each info-graphic can be downloaded separately

Use this summary together with the Betterorienteering.org website

Across Better Orienteering, many people have generously allowed me to integrate videos, explanations, games and articles that all help people work their way through what orienteering is and how to do it. Thankfully in the last couple of years several organisations have produced excellent videos demonstrating a range of skills, in particular the Irish Orienteering Association, South London Orienteers (SLOW) and the O-Ringen organisation with O-Ringen TV. Taken together they give an amazing insight into how to orienteer that wasn't available until now.

So, overall, the Better Orienteering website aims to give a structure to the learning process, so that people can explore orienteering in manageable steps in a very visual way.

Not everything is the same across different countries, however the important elements of orienteering are true world-wide. Here is the UK colour coding system, for example, to show the difficulty of courses. Not every country has the same colours hierarchy.



The challenge of learning to orienteer

At the simplest level orienteering is about enjoying running around a course with a map, but to master it there are many concepts and skills to develop. It is worth bearing in mind when we try to explain orienteering to people, that we are asking them to learn and apply, to some degree at least, the following:

- learn two visual languages - maps symbols and control descriptions
- develop spatial thinking to interpret maps
- develop the ability to visualise that information in 3-D
- build a personal terrain library to give the building blocks for visualising better
- learn strategies to analyse that information and apply it to moving through the terrain
- learn to relate that 3-D information to their perspective as they move through the terrain and through their visualisation of it and to relocate from mistakes
- and build a high level of overall fitness.

No wonder it takes a long time to get good at orienteering!

Summing up, what can we say? Orienteering maps have developed amazingly to make it much easier to orienteer accurately and reliably than even just 20 years ago. Orienteering control descriptions allow fair competition across language barriers. Initiatives like Better Orienteering and various series of orienteering learning videos make it easier for people to enter the world of orienteering and develop their navigation. However, there will still be plenty of scope for developments in all these areas.

Design is embedded in every aspect of orienteering and it has been fun to think about how to use design to better communicate orienteering to people wanting to get into the sport and to improve.

Duncan Bayliss, June 2020

Reference

Gueorrgiou, Michel (2018) 'The winning eye, how to succeed through map reading', Imprimerie Villiere, France