FLIGHTS OF FANCY
– Some fancy stairs and some practicalities

Geometrical stairs
A geometrical stair does not have newel posts, and the handrail for a flight and landing is continuous. The flight may be curved or straight. These stairs are the apogee of the craft of joinery as applied to house-building, and they are invariably bespoke. (The name presumably comes from the deep understanding of three-dimensional geometry required to make such a stair.)

If you are rich and you want to impress your guests, consider fitting geometrical stairs.

Geometrical stair – continuous handrail without newels
(Photo from the Houzz website.)

Traditional cantilevered stairs
Cantilevered stairs are generally to be found in grand buildings built prior to the twentieth century. They are a marvel to behold – but they are mis-named.

Dean's staircase, St Paul's cathedral
The steps are usually stone, with the front edge of a step resting on the back edge of the one below it. On one side, the steps are embedded in a wall, but on the other side they are free. This side of the stair seems to have no support. It appears as though the steps have been cantilevered out from the wall, but that is not the case – the steps are only embedded 10-20 cm into the wall. The vital mechanical function of the wall is to prevent a step from rotating under the weight of the steps above it. As a result, the load of the heavy steps is transmitted down through the steps themselves to the floor at the bottom.

So the term 'cantilevered stairs' is a misnomer. To add to the confusion, some people call the stairs 'geometrical stairs'. This is correct in as much as they don't have newels, but they are very different from the geometrical stairs made of wood, mentioned previously.

**Modern cantilevered stairs**

Stairs with truly cantilevered steps can be made to order by specialist companies, and they can look amazing. Their stability is usually due to steelwork embedded in the wall and also possibly in the steps. Different methods are in use. The wall may be masonry, studwork or reinforced concrete.

Sometimes the guarding is glass, with the handrail attached to the wall.

**Spiral stairs**

Spiral stairs take up less floor space than straight flights, and they may possibly earn a place in a compact house. All the steps are winders around a central pole. As mentioned in my January article, from a functional standpoint winders are inferior to ordinary fliers, but that might be outweighed by the small footprint of spiral stairs and by their visual novelty. In an open plan design, a spiral stair rising from the living area can form an architectural feature.
A helical stair is even more striking. This stair has an open well in place of the central pole of the spiral stair.

**Concrete stairs**

In the UK, wood is the favoured material for stairs, but on the Continent reinforced concrete is widely used, especially in southern Europe. The thermal mass of the concrete is useful for evening out indoor temperature fluctuations.

A concrete stair combined with a Trombé wall is a key feature of Springfield House in Norfolk. (This energy efficient house was the subject of a Grand Designs program. A Trombé wall acts as a heat store. See Further Info.)

Concrete stairs are usually cast in timber shuttering. Making the shuttering is more complex than may at first be thought. It is work for a carpenter, and, indeed, some carpenters specialise in it.

**Alternating tread stairs**

According to Approved Document K, an alternating tread stair may only be installed for a loft conversion, and then only if an orthodox stair cannot be used. Such a stair may not be installed in a new build, yet it may be of interest to readers, if only as a curiosity.

The treads are not rectangular, but are cut away to allow a foot to pass by. (See the diagram, and the photo. Note that the going of a step is measured relative to the second step above it, as shown in the diagram.) These stairs are fitted at a much steeper pitch than ordinary stairs.

![Diagram from Approved Document K](image1)

**Wacky stairs**

Some architects let their imagination loose on stairs, the results sometimes being as much sculptural as functional. Here's a couple of examples:
A variation on the alternating tread stair
By the Swedish company, TAF.

Ribbon stair of 10mm thick sheet metal
Another variation on alternating treads
By HSH Architects, Prague

Utilising the space beneath a stair

The space beneath a stair can be left vacant, increasing the spaciousness of a hallway. More often it is utilised for storage space, and the spandrel (triangular area) is partitioned off to form a cupboard. Traditionally this was for brooms, but nowadays it might store a vacuum hose, hot water cylinder, or whatever.

Bespoke drawers or cupboards are possible, too, as below.
In a compact house, the space beneath the upper part of a stair might be incorporated into a neighbouring room, typically a cloakroom – perhaps with the WC placed where the headroom is low beneath the stair.

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SOME PRACTICALITIES

Ordering a staircase

Don't order a staircase by taking measurements off the plans. Measure what has been built after the joists for the upper floor have been laid. The key dimension is the total rise, which should include the thickness of the boarding for the upper floor. Headroom should be checked, also. (It may be that the stair manufacturer, or their rep, will come on site to take the measurements – which absolves you from any error in measurement.) Order in good time – delivery of a bespoke staircase may take several weeks.

There are diverse sources for a wooden staircase. A local joinery company may make one for you. At the other end of the scale are the national joinery manufacturers, such as Jeld-Wen. They don't just make straight flights – they can include winders and landings in a wide combination of variations. And there are staircase manufacturers with versatile websites for ordering online. For something more special, eg, a geometrical staircase, there are specialist manufacturers.

Fitting a staircase

Opinion is divided as to whether is is preferable to fit a stair before or after plastering. Talk to your plasterer and chippy.

Start fitting at the top. The top of the stair, and any newels, are fixed to a stout 'trimmer' or to a 'trimming joist'. An 'apron' imitates a riser and covers the face of the
joist. A 'half-nosing' is let into the boarding of the landing to match the appearance of a regular stair tread. If there is a bullnose step at the bottom of the stair, it is fitted separately.

Balustrading is best fitted as part of the second fix.

When the stair is fitted early on, it may be advisable to protect the treads during the rest of the build, especially if the stair will not to be carpeted. Attach some hardboard to the treads.

The British Woodworking Federation publish a useful guide to installing timber stairs. (See Further Info.)

FURTHER INFO:

British Woodworking Federation Stair Scheme
Free pdf's include:
*Design Guide: Timber stairs* (32 pages)
Their website also has a directory with details of the scheme's members – more than 30 of them.
www.bwfstairscheme.org.uk.

An Introduction to Stairs and Building Them
An offbeat, informative website by a Pommie-Aussie, Builder Bill.
(The site also covers other topics, such as roofing, concreting, doors, and other carpentry work.)

Springfield House – A Case Study
For a pdf and for other details (including the concrete stair and Trombé wall), see the website of its architects:
www.studiobark.co.uk.

Jeld Wen
Manufacturers of stairs, windows and doors.
www.jeld-wen.co.uk.

Stairplan Ltd
They have a bewildering number of web brands, including:
www.stairplan.co.uk,
www.gostairs.com,
www.turnings.co.uk,
Tradestairs prices:
Straight 13 riser stair (12 steps) for £160 + VAT (without balustrade) or £300 + VAT (with balustrade).
Winder 13 riser stair (3 winders) for £300 + VAT (without balustrade) or £450 + VAT (with balustrade).

StairBox
Design and order your staircase on line, and get a fast delivery.
You can even pay with BitCoins!
TK stairs

Heritage Doors & Floors Ltd
Doors, floors – and stair parts (mostly in oak).
www.theheritagecollection.co.uk.

Richard Burbidge
They have many stockists throughout the UK.

Fontanot UK Ltd
Space saving and spiral stairs.

British Spirals and Castings
Spiral and straight stairs in aluminium or wood.
Also gates, railings and balconies in aluminium or iron.
www.britishsc.co.uk.

JOAT-London
Bespoke furniture for understairs, or anywhere else in the home.
www.joat-london.co.uk.

Houzz
Innumerable photos for interior designers: kitchen, bathroom, bedroom, etc – including at the time of writing 93,337 photos of staircases!
www.houzz.co.uk.

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<th><strong>Diagram from Approved Document K</strong></th>
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<td><strong>Alternating tread stair</strong></td>
<td><strong>By Fontanot</strong></td>
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*Handrail (both sides)*

With this type of stair the going is measured between alternate nosings.

- **Minimum going**: 220mm
- **Maximum rise**: 220mm

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