roofing

Roof types (clockwise from top left): single-pitch or lean-to; hip; double-pitch; gambrel.

what is it?

Building a roof is the most primal building activity. A roof alone is already a building, but a building without a roof is barely one at all. Roofs come in an enormous variety of forms, and once upon a time they were all DIY. The world is full of materials with which we might cover our heads, and it's also replete with examples of how to use those materials to make roofs.

The crucial thing about a roof is its span. Without a span a roof is no more than a coat, something we can crawl under for shelter. Available materials and skills dictate what kind of span you can create; your climate will provide feedback on the success of your venture.

Caves are dangerous places, in the past often inhabited by large and toothsome creatures. It wouldn't be surprising if roofs pre-dated caves as shelters - a lean-to of ferns against a fallen tree, or two branches draped with a skin. Roofs evolved from the realisation that something resting on something else made a space more comfortable than sitting in the rain.

Timber frames, bark, thatch, the fabric of yurts, all recall the first roofs. Since then new materials have become available: the vaults of stone and masonry, steel and concrete roofs.

The simplest roof spans are single-pitched or lean-to, then pitched roofs with two sides, and hipped roofs with four or more pitches coming together at hips; there are gambrel roofs, hipped gambrels, domes, arched roofs, and combination roofs. The choices for construction divide into two groups - roofs that draw on ancient traditions and materials, or modern, high-embodied energy materials and styles. Green roofs represent a fusion of ancient turf and timber roofs with the membrane materials available to modern builders.

what are the benefits?

Whilst the benefits of a good roof perhaps do not need to be restated, from a design perspective it is always worth looking again at function. When coming to put a roof on something it's worth asking why one type is chosen over another.

For earth and straw bale buildings a roof needs to protect the walls, a "good hat" they used to say. For any building a roof is a hat: it should keep the building warm when it's cold and cool when it's hot; it should keep the rain and the snow out, protecting the occupants and the structure. Roofs can sound-proof, and they can regulate moisture, dealing with all the water vapour caused by the people living underneath; they can also be designed with the simple idea of providing more living space than do the walls alone.

It's extraordinary how many roofs have been built without the full potential of the structure in mind. We've probably all seen lofts with roof trusses that would make conversion of the space for living next to impossible, or at least hugely expensive. Roofs can do more still. A roof can be the place where you generate power, and if so, you'll need to think about how and where to put your solar panels, and the aspect and slope of your roof, as well as the position and latitude of your dwelling. The same is true if you want the roof to be the place where you generate hot water. The roof can be where you harvest your rainwater, and so you'll need to think about what kind of roofing materials are best for that, how clean your roof will be, and how your roof design and gutters will work with your water tanks, ponds, and the wider landscape. When we design roofs properly we're almost certainly not going to be able to build the ideal roof, something will stop us: money, location, planning or building regulations, but thinking about that ideal roof might get us closer to the solutions we would like to see in place.

Roofs can be conceived of as wildlife habitats - build your roof for the bats, for the birds and you'll reap the rewards in your organic veg garden - and as productive spaces in their own right. Roofs might be good sites for apiaries, or to grow those dry-loving herbs that won't grow anywhere else; a roof is usually - not always - higher than the property it sits on, and so is above sinking cold air: it's not such a bad environment for season extension and early cropping.

greenbuildingpress.co.uk/archive/sustainable_roofing.php provides information on the environmental impact of various roofing materials, in terms of embodied energy and toxicity (wooden shingles came out best, followed by natural slate, as long as it's from your country).

Slates & tiles (clockwise from top left): natural slates; solar tiles; recycled plastic slates; clay tiles. All involve less embodied energy and pollution than concrete tiles, and of course the solar tiles generate electricity.

what can I do?

A shed roof, or a lean-to shelter for firewood, can be the start of a DIY roofer's apprenticeship. Build a light framed wooden roof, board it and cover it with roofing felt. Farmers around the world learn their roofing by building animal shelters. Roofing small structures teaches the basic skills and physics involved whilst also providing the opportunity to get creative, use recycled materials, collect a few tools together, and have a go at guttering and rainwater harvesting as well.

You can attend general roofing courses, or courses for specific types or aspects of roofing; but if you're serious about roofing, if you feel drawn to the trade, then work for a roofer. The world is full of roofs that need work, and you don't need to have the skills or courage of a steeplejack to learn enough to be useful.

Working on a roof can become an obsession, it can become difficult to pass a roof without staring at it, and it can become dangerous to drive anywhere because of the constant temptation to look up at roofs - but one of the things that you can do is exactly to become passionate about roofs, stare at them and study them.

On one level roofing is very accessible - roofs are all around us, and we can all find the time and resources to build a little shed. On another level though, roofing is quite out of reach for most. Roofing is dangerous and roofers use scaffolding and safety barriers even when they're not far off the ground; roofers' tools are highly specialised and expensive. You might find yourself in a situation where your next question to yourself should be "could I kill myself if I try to do this?" If that's the question in your mind, then stop. Call a professional roofer. If you can't afford one, befriend a roofer; buy a builder's sheet and cover the hole up until you can afford one.

Roofing can be learned, and like all building jobs can be made safe with proper precautions. Some roofing jobs will require more than one pair of hands, but the vast majority of roofing jobs can be done with a sensible DIY approach and an appropriate amount of thought beforehand.

Roofing is weather dependent, and it's vital that you're prepared to cover up the structure you're roofing if the weather changes. You don't want the straw bale walls or the cob to get wet, and if the building is already inhabited you don't want your well-intentioned roof repair to turn into a catastrophe for carpets and ceilings down below.

resources

- lowimpact.org/roofing for more info, courses, links, books, inc.
- Kevin Taylor, *Roof Tiling & Slating, a Practical Guide*
- Joe Jenkins, *the Slate Roof Bible*
- C N Mindham, *Goss's Roofing Ready Reckoner*
- Mike Lawrence, *Roofing & Insulation*
- fixmyroof.co.uk - vids and articles by the trade
- nfrc.co.uk - National Federation of Roofing Contractors

Natural roofing materials (clockwise from top left): thatch; wooden shingles; turf; stone.