HOUSE PLANNING HELP

Episode 33

Are Conservation Techniques Becoming More Energy Efficient?

With Douglas Kent from SPAB

The show notes: www.houseplanninghelp.com/33

Intro: Douglas Kent is the Technical and Research Director of the Society for the Protection of Ancient Buildings and I started by asking him about his background and how he became interested in this area.

Douglas: Well I've always been interested in old buildings and I was brought up in the Saffron Walden area in Essex and I think just living around a town with such a rich and deep architectural heritage just rubbed off on me and influenced my professional career and I've been involved with the SPAB now since about the year 2000 and I've never looked back, it's been absolutely fascinating and I really enjoy working in the building conservation field.

Ben: SPAB - the Society for the Protection of Ancient Buildings. Can you give us a bit of a foundation of how it got going, what it aims to do etc?

Douglas: The Society for the Protection of Ancient Buildings or SPAB for short was founded in 1877 by the designer William Morris and the objective is to save old buildings from damage, demolition or decay. At the time they were very much trying to prevent buildings being restored, in other words rewound back to a certain point in time to what medieval masons, for example, should have done if they had built the churches properly in the first place and so on.

It was all about a particular approach called, or what is rather grandly now called, Our Philosophy but the whole approach is to actually conserve as found so it's all about conservation and repair rather than restoration which is strictly speaking, in an architectural sense, about turning a building back in time or changing it. So that's really a difference between the approach.

Morris set us up in 1877 and we now have about eight and a half thousand members, we're an independent charity and the oldest group in the UK fighting to protect old buildings.

Ben: So you're fighting to protect these buildings. Are more of them coming about in this state or is it more relevant today than it was back then or how have things changed?

Douglas: It's really to do with the nature of the threat. In the past there was outright demolition of old buildings whereas today, yes, occasionally it still happens, for example, with the Channel Tunnel Rail Link or, heaven forbid, further expansion of airports such as Stansted, which would have a catastrophic effect on the historic built environment locally.

Now it tends to be perhaps the way in which buildings are conserved and often the damage is unintentional and people using materials that don't work sympathetically with older buildings that not just look different but are intended to perform differently. So for example with a new building you are often reliant on a system of cavities, barriers and membranes to exclude moisture and rain and so forth, it's rather like a raincoat. With an older building it's more analogous to an overcoat so it allows some moisture to come into the building perhaps when it's raining into the fabric that is to a certain extent, perhaps into a thick wall, but it will evaporate out when the conditions change so we talk about an old building being breathable. It allows moisture to pass readily through the fabric and, as I say, it is an overcoat rather than a raincoat so there's that difference of approach between the two types of construction, the older what's generally called traditional construction and the newer, the modern buildings.

Ben: Maybe you could explain the listing process because I imagine a lot of the buildings you are referring to might be listed but we do have an international audience and I'm not sure is that something that would exist in lots of countries, this protection?

Douglas: Protection exists in many countries. It varies hugely in the way it is actually implemented, for example I was showing a group around from France who were very passionate about their heritage. In the UK we have three bands, we have Grade I which is the top band, the smallest percentage of buildings, Grade II*, the star is very important, that's the next band, and then Grade II which is the vast majority of older buildings and then of course we have things such as conservation areas, wider zones of protection and things like scheduled monuments.

Ben: And what does that mean then when we think terms of energy efficiency. What can we do, are we restricted by being listed or is that actually a very good thing?

Douglas: The listing can actually be a very good thing because people often unwittingly will dash to improve the energy efficiency of the house. Perhaps they could cause unintended harm to it, for example, by not considering the aspects to do with breathability, they could effectively be treating it like a new building and while some measures would be absolutely fine for a 1960s or 1970s house, anything predating about 1919 you need to consider that breathability that we just spoke about so you'd use breathable materials such as lime mortar or lime plaster or systems that have that breathable quality to them. If you don't there's a risk you could very well turn a cold damp building into a warm damp building and trigger off rot, decay, you know, rusting, mould and even aggravate human health ailments such as asthma and so on. So it's very important.

Not only that you could well damage the aesthetic qualities of the building as well, and also unwittingly take out a lot of components that in fact have a long lifespan left, for example, people often will take out a single glazed window which is built with a really good timber and replace it perhaps with a plastic window and double glazing and in a lot of cases we see that the seals go. I've had a friend, for example, whose seals on their double glazing have gone after literally a couple of years and the previous owner had taken out the windows which were good quality Victorian ones. They would have had a perfectly decent lifespan left, far better than timber that you can generally get today and it doesn't make sense from an energy efficiency point of view if you are taking out these windows. You are not only saving little if any energy but you are damaging the very qualities of the building that you are trying to protect in the first place. You know we spoke about trying to retain as much as possible of the physical fabric of the building and obviously you are diminishing those qualities if you are removing authentic elements of the fabric.

Ben: As you were saying that I started to think of some of the streets around where I live in Hertford and clearly a lot of windows have been replaced. They never look right I will admit that but these people must be making these changes for a reason?

Douglas: They're making the changes for a reason. They are often driven by the very laudable aim of improving energy efficiency but we would

say that it's important to actually, in terms of the way you approach buildings, we would say that obviously going back to William Morris's original principle to retain as much as possible of the original fabric of the building and the overall essence of it. You do that by using compatible materials and methods and carrying out only work that is essential for the long term survival of the building but also underpinning that work with good information and a good understanding of the building.

So we would often suggest, for example, that rather than go out and blitz the building with new windows perhaps consider where you are losing energy so for example carry out thermal imaging or an air pressurisation test and you really pinpoint often where the draughts etc. are occurring and rather than just doing a blanket approach and putting in new windows also consider, in fact, how much energy you would save because research by people such as Historic Scotland show that in fact you can meet or exceed the value of new double glazing by upgrading existing windows using secondary glazing and so on.

So whilst, yes, it's very good that people are thinking along the lines of being greener, if they just rush into it without having the full facts they can as I say save little if any energy and damage the building in the long term which is obviously in no one's best interest.

Ben: One of my core reasons for coming here today was to ask this question. Is conservation/restoration, are those techniques becoming more effective when we think about energy efficiency?

Douglas: All the time we are refining our techniques. I think that one of the problems have been that, yes, we are trying to base what we are doing on good information but in fact it can be really difficult to know exactly what is in the best interest of an old building. So the SPAB has entered into a number of research projects in recent years and we are beginning to get information through and it bears out what we thought was the case but it's good to underpin our advice with robust scientific evidence. But for example, we are finding that in 77% of cases the U value, that is the thermal transmittance, of a wall is actually better than the calculated value when we measure it in situ.

We've measured a whole series of buildings, different methods and materials so wattle and daub, stone buildings, cob buildings, a whole range of vernacular building, traditional materials in different parts of the country supported by English Heritage and the Dartmoor National Park Authority and in 77% of cases the U values

are lower than what was calculated and that is partly because of the way they are constructed. Often when we were doing the calculations we don't know quite what the construction of the wall is and even if we do there is often very little data that relates to those materials in terms of inputting data into software. Obviously if it's garbage in you get garbage out so, in fact, the U values aren't as disastrous as people often think.

Ben: I know that we are in the quite early stages really, aren't we, of this sort of research. Is there anything that you would like to carry out if the funds mysteriously became available from somewhere? What would you really like to be finding out?

Douglas: I mean we are looking for funds all the time to further our research projects. For example, we are trying to establish what the limits are in terms of insulating and making older buildings more airtight. For example, we are beginning to think, or the general conclusions that we are beginning to find are that if you try and insulate a traditionally built building below a U value of about 0.4 then that could have technical risks, the risks that I spoke about in terms of mould, rot and so forth.

Equally when you are reducing the number of air changes per hour if we reduce it below about 0.4 or 0.5 we are beginning to think that that could have negative consequences but there is a lot more research that could be done and also into the software, the programmes such as WUFI that are used in the hygrothermal modelling. There's a lot more that can be done into refining those and a lot more data that could be used to really improve the whole basis upon which we are making decisions at the moment and also in terms of looking into the performance and the detailed statistics relating to traditional building materials.

A lot more needs to be researched and we've only really scratched the surface so far albeit we've got some very interesting and helpful conclusions but it's only the beginning.

Ben: I've certainly found myself using the word 'sustainable' a fair amount in the last few episodes in particular and when I look at historic buildings, are they actually more sustainable because you can see how they've lasted through the ages? Where do you stand on this?

Douglas: So old buildings aren't necessarily the energy efficiency disaster they are often portrayed or assumed to be. For example they are very frequently built of materials with a lower embodied energy than

their new counterparts. They frequently have a longer lifespan and they are easier to repair than modern parts too. For example if you take a window, just a timber window, a local carpenter can come along and splice in a little repair there and it will then have a longer lifespan, whereas if you have often the modern counterparts they can be propriety systems that, if they do go wrong, perhaps the company is no longer trading in 50 or 60 years' time they are not that easy to repair and you end up replacing the whole lot so that's not particularly sustainable.

Older buildings not uncommonly possess features that are conducive to good energy efficiency, for example they can have really thick thatched roofs, thick walls that are able to retain heat and release it gradually and windows that are disposed to maximise daylight but minimise heat loss. Not only that but many old buildings actually adapt well to modern living requirements and are constructed with a lime mortar which makes recycling at the end of their lives much easier.

Ben: Where does this leave someone who is thinking of investing in a period property? Do we have to choose between we want to be faithful to the history or actually we want to go down the route and be energy efficient, maybe we should be looking somewhere else?

Douglas: It's all about taking a balance so it's not about freezing a building at a particular point in time and aspect or anything like that. From the SPAB stance we would suggest a step-by-step approach. So first of all undertake basic maintenance, for example people often think about quite glamorous things like micro generation, putting say a wind turbine up or something like that, and yet their gutter is leaking and something simple like correcting a leaking gutter will prevent the wall becoming damp and obviously a damp wall is an energy inefficient wall and so undertake the basic maintenance first of all. Every year we run a national maintenance week to emphasise that very point.

The second step would be to consider the quick wins, so the low hanging fruit effectively, the things that have a short payback and cause little disturbance to the historic fabric of the building. For example things like draught proofing windows, doors, topping up loft insulation, fitting thermostatic radiator valves and that kind of thing. And then only as the next step then consider the more major work, for example, upgrading your boiler and heating system, perhaps introducing a renewable heating source or reinstating a missing lime render externally on your stonework and so on. It's very helpful we often find to carry out some, as I've already

mentioned a little bit earlier, thermal imaging or air tightness testing just to help you pinpoint, particularly if you are considering anything more major, you know you can really target your measures then rather than just taking a blanket approach and hoping it would do some good, by spending a little bit of time and money at the outset that can reap big rewards later on.

Ben: Quite a lot of my podcast series has been looking into very efficient ways, the Passivhaus approach and I'm particularly sold on that for new build but there have been examples of where houses have been converted to that standard. I know you put a lot of the house in the bin to get there so I can understand that you would be against that, but I have a question. For people who might want to go down this route or even to learn more or experiment, what sort of properties would we be looking for that we are not going to affect the real history? What I'm saying is that can we almost use just, this place is falling down, here are the walls, let's keep those and build our building on the inside.

Douglas: Generally I'd advocate that if you've got a building that predates about 1919, in other words the traditional construction then you would want a traditional approach and something that takes into account the breathability of the building and in fact the pre 1919 buildings constitute one in five of our building stock so 20% of our building stocks so that's far more than just your listed buildings. It's actually a lot of Victorian terraces for example so it's very important that you don't unintentionally compromise the breathability and lead to all the negative side effects that I've mentioned earlier on.

Anything post that period, generally speaking, not necessarily in every single case, but as a general rule, then you've got a much freer hand to consider some of the alternative approaches such as Passivhaus and approaches that hermetically seal a building. They're founded on a completely and built on a completely different basis.

Ben: Is there a synergy at all in this between approaches that you can see going forward we might work out a better way or is it just going in two different directions?

Douglas: I think there is certainly a strand that says that in fact the more traditional approach could be applied to new buildings and people are, for example, using materials such as lime, perhaps in a modified way mixing it with hemp and there is certainly a strong strand, so it's not necessarily that the old approach isn't applicable

to the newer approach in every case so I think there are some very interesting developments.

It's a very fast moving field at the moment and so all the time there are new developments coming to the fore and for the past four years or so the SPAB has run an annual conference in the autumn. In fact we've got one taking place up in York in a few weeks' time where we present our own research findings. We also hear about what some of our other fellow organisations are up to in terms of their own research but, yes, it's a very fast changing field and one we are monitoring closely and it will be interesting to see where things go over the next few years.

Ben: Just as we get towards the end I'm looking at the bigger picture. I know last year I was quite surprised to hear that a local historic building, Ponsbourne Park, was being taken down to build something new and energy efficient. It was a big supermarket involved with this so they seem to have got their way but on the general theme of that, is there a risk as people become more and more aware of what a new building can do in terms of much reduced costs and much higher levels of comfort that they may neglect the old buildings or choose just to walk away from them in which case there becomes almost a dangerous situation for these old buildings?

Douglas: I think that's one of the reasons that we are not totally against upgrading older buildings because if we said that people shouldn't undertake any effort to thermally improve an old building then I think they would just be seen as a liability.

Having said that and I think it was borne out by the energy performance certificates, which I should add since the beginning of 2013 aren't required now for listed buildings. That's often not appreciated but since that date there is no requirement for EPC for a listed building but a lot of those were in fact being, even before they were withdrawn, being taken with a pinch of salt because some of the recommendations that were coming out of them and people do like to live in old buildings so I don't think there's a long term threat per se but I think that we do need to be careful and to make them comfortable and fit for 21st century living.

Ben: I live in a Victorian terrace at the moment and according to all the data that I've been collecting on it, it is an A rated building. I don't know whether that's true because I don't use any energy or try not to.

Douglas: Quite. At the end of the day it does come down to, you can have the most wonderfully energy-efficient building but if the occupants aren't sympathetic with the overall aim of saving energy then you're not actually going to save much. In fact there's the rather perverse consequences where it's often been shown that people who live in some of the more energy-efficient houses are using them perhaps in a more cavalier fashion and the money that they are saving from energy efficiency they're going off and flying around the world and in terms of carbon footprint they all kinds of unforeseen consequences. So I think the bigger picture is actually much more complicated than the black and white situation that's so often just portrayed to people.

Ben: Do you have a final thought on this topic that we have been covering today that's worth leaving in our minds?

Douglas: I think at the end of the day conserving old buildings as I've mentioned is about keeping as much as possible of the physical fabric of the old building and that comes back to the principles that were set up by William Morris when he founded us in 1877. So it could be argued that, albeit unwittingly, perhaps William Morris in encouraging people to save old fabric and not to consume more resources in putting up new buildings was one of the first people to talk about sustainability.

Ben: Douglas thank you very much.

Douglas: Thank you very much indeed.