

The Lessons of Analysis

The examination of a building should be with an intention of understanding the building so that imperfections can be set against the building type to interpret the risk they may represent.

I remember on one occasion standing in front of the debris of a building that had collapsed the day before, wondering where to start – (on that occasion I pulled out a pad and began drawing what I could see – and slowly what was there began to make some sense and the anomalies became more obvious). When discussing some of these ideas with a medical doctor, she recalled that during her training the tutor told the juniors to stand back for 10 seconds and look at the patient. She mentioned that because of this teaching she stood back and counted to ten, before saying anything. At least whenever she was being appraised for her work there was the obvious sign of Looking.

The film 'Sully' is about the pilot who landed in the Hudson River NY. The subsequent enquiry, challenged the pilot by showing a computer simulation that predicted that a pilot should have been able to land the plane at one of the nearby airfields. The challenge was probably brought by the indemnity insurers who were going to have to pay out for a lot of damaged luggage, as well as a destroyed plane. One insurance company sought to establish liability for pilot negligence (a specific policy) as opposed to act of God (the bird strike that started the problem) which is a different insurance cover. The computer simulation resulted in a safe landing at a nearby field. When analysed, this was only if no time was taken in considering the options when the bird strike took place. That is clearly impossible; there must be a provision for the review of the circumstances before making a judgement call. If the pilot took 35 seconds to review the options and decided to go for a close-by airfield, the simulation showed that there was not sufficient elevation to reach safety and the plane would have crashed.

How do we start examining a problem? I suggest that we start considering a problem by looking at it. The looking should prompt other activities and the rapid flicker as thoughts run through your mind; those initial thoughts as well as the decisions need to be noted so that there is a record of the preliminary response (and the factors that prompted action) to what you saw.

LOOKING - involves making an appraisal of the circumstances which 'are' the problem. Once one has got a handle on what has or might have happened, with what, and when, one can then move towards understanding the challenge. What caused the problem and how do you respond?

Once you understand the issues, you can change from looking AT to looking FOR. The processes need to change into a sequence of what could have taken place, and if they had, what evidence would you expect to be present, so that you now are looking for a part of just one scenario.

Looking should include noting the timescales of the damage, the material that was damaged, the probable load paths, the probable supports, or, in construction, the likely construction design that was used in the context of a collapsed building one was looking for causes. In my experience the cause of a building failure could have included climatic problems (high winds, rainfall, freeze expansion, heat caused expansion and contraction), ground condition changes (earthquake, ground swelling or shrinkage, swallow holes, mine collapses), or material failures (beam decay, cladding

failure, brick crushing, and corrosion), or defective construction and the passage of time. There was also enemy action at that time, with bomb explosion amongst the causes.

These alternative causes move one into the fields of looking for the evidence to support one or other cause.

Looking means to look at as well as looking for.

Observe, examine, understand, look at, and look for. Trace the load paths in the building, consider the quality of the materials used, any changes made, to the construction as you see it. Essentially – understand how the building was constructed.

Where the Looking might end you do not know, because one might be led into areas where the evidence has an involvement in civil, criminal or state actions and the evidence must not be 'tampered with'. Often your inspection will be after much of the evidence has already been trampled upon.

One of the early examinations I made of a collapsed building I first assumed was as it fell. But, of course, if the building had been occupied, the first people to be on the scene will not be investigators, but rescuers, trying to get the living or dead out of the debris.

This causes problems when the sign of, for example, an explosion - which itself moves the evidence around, are repositioned without a record having first been made of their prior location. What happened when or soon after will need to be identified - especially if your conclusions are to be presented in court. What is the base upon which you are going to make your decisions or draw your conclusions? Fortunately the use of mobile phone cameras does usually give an earlier visual record than heretofore.

LISTEN

People want to tell you things – it might be when a problem started, when they noticed it (which might be very different in time), listen to the sound of the building, the sound the fabric of the building makes when tapped, rubbed or touched; listen and evaluate the evidence. Timescales might also become relevant, and through that the responses probed. There is also the problem that not everything you are told will be correct – there is a curious human condition that assumes you are helping if you say what people want to hear. Therefore, whatever you learn has to be analysed to determine the quality of the information, whatever you determine must be appraised.

LEARN the consequences – the steps that could be taken and the consequence. Who has done what? Much of my working life was involved in presenting evidence to a court, and the evidence would be challenged. It was far better to challenge yourself as to the meaning of the evidence, at least when you came to be challenged you would have the appropriate arguments.

LOG – make notes of what you are seeing, list the possibilities so that you can form a plan; what possibilities can you exclude? (Junior doctors who have just qualified learn their trade by taking the notes for a senior doctor in a hospital whilst she or he is doing their rounds. Note-taking is a skill, and it is one that should be practised. Making sure you have a record from the earliest moment is a competence. With the quality of photographs now possible from a mobile phone, the quality

camera is less used. The quality of an image from a camera should give greater value – as it is better able to be interrogated.

Now we have an outline of what is involved we could throw two scenarios at all of you and see what we can pull out of the data that has been provided. Against this information what preliminary judgement can we reach?

Valuations

Looking at negligence claims related to property valuations (127 cases), the reasons break down into three clumsy categories:

Inadequate or faulty methodology,

Poor site inspection

Inadequate market knowledge.

The faulty methodology included errors in development costs, using an inappropriate method of valuation (investment method on residential let premises). In one case, the developer had converted houses into flats, filled them with tenants, produced a schedule of the rental income, and accounts to show the payments over the period since the property was converted. He then sought an investment value for the premises based on the income received. There were no fixed term leases, security of tenure, tenants' details. Shortly after the transaction was completed – the investment began to disintegrate, with the rental values being unable to be achieved with new lettings.

The poor site inspection includes failure to take account of the condition of the building, poor judgement over the cost of repair and the implications

The inadequate market knowledge included both poor market knowledge as well as poor knowledge of local transactions (the local market); one goes to suggest that the valuer should know if property prices are going up or down, or where in a cycle they might be at the time of the valuation and to factor into the valuation the consequential outcomes anticipated (or set out a warning of what could happen) , and the second that there should have been research into local property prices and supply and demand.

Margin of Error in Valuations

For a standard, estate-type, residential property, it may be plus or minus 5%.

For a valuation of a non-standard/non-estate residential property, it would usually be plus or minus 10%.

For a unique property, it could be plus or minus 15%, or even higher in an appropriate case.

Surveys

There may also be many reasons why a skilled professional such as a surveyor might make an error in a property survey, apart from human error.

Some of the errors are in the writing of the report, by failing to express oneself with sufficient care. The reader should understand the implication of those defects that you have seen or exposed, as well as the level of risk that you believe to exist in what you have seen.

That risk might be in what has been published about that type of construction, or the projection of the circumstances your inspection has uncovered. The sight, for example, of a small piece of metal having corroded should suggest that where metal is used in the construction it might be in a similar condition – which could mean... what?

Fire

Recent fires have exposed a considerable risk in relation to the examination of clad property. The analysis of the Grenfell Tower fire has wider implications than the failure of a domestic appliance. (washing machines 19%, tumble dryers 18%, electric cookers 15%, dishwashers 9%, fridge freezers 8%, extractor fans 5%, microwaves 4%, others 6%).

The Grenfell fire was started by the fire in a defective fridge freezer. The extent of the damage was caused by the construction that gave pathways for the fire to spread on the outside of the building (and then enter flats from the exterior).

The cladding specified had been changed for cheaper materials (the fire retardant cladding originally specified was replaced with cheaper – saving £293,000). Celotex FR5100 claims that it is fire rated, but has now been withdrawn. In November 2017, the factory that makes Reynobond PE Panels caught fire. In June Arconic announced that they were stopping global sales of Reynobond PE cladding for tall buildings. The voids in the installation of the cladding allowed the fire to be fuelled by air rising in these cavities and the added heat generated resulted in the Celotex insulation catching fire.

The examination of any multi-occupied building should check on the viability of the fire precautions and of the escape provisions. An examination might show up errors – suggesting poor site management, and an elevated risk for the users of the building.

Report

If any action is taken over the surveyor's advice it will be based on the content of the report. The report must contain clear warnings where you believe they are necessary, as well as appropriate guidance as to how to determine the risk that is present. That might mean a more detailed examination, opening up parts of the structure, or the work of specialists in the particular field that is identified as a risk.

The report must give a clear warning where an element of the construction is believed to be at risk, as well as guidance on steps to be taken, and information as to the type of construction in the subject property.