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TIMBER BUILDINGS IN BRITAIN; AND A PIONEER HISTORIC TOWN STUDY

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The extraordinarily rich variety of buildings to be found in Britain, within Country's relatively small geographical compass, is a direct expression of the wide range of local building materials, producing a diverse and varied local architecture. The geological structure of the British Isles, with its broad belts of differing building stones particular and individual to each region, has produced vernacular buildings and more sophisticated local styles which faithfully reflect their special qualities. These vary from the granite of the Scottish Highlands to the softer, golden oolitic limestones, serving for walls and roofs alike in the characteristic cottages of the Cotswolds. The clay of the Midlands in turn yielded the red brick of Victorian domestic terraces. But one of the most interesting and characteristic local materials of the Island has always been timber. Some of the earliest British buildings are of wood; and for centuries, strong local tradition of wooden architecture have persisted.

Perhaps the most attractive of all building timbers in Britain is English oak. Indeed, the country depended upon oak from the English forests, not only for building but for the "wooden walls" of her maritime island defence. There is much in common between early ship construction and wooden architectural forms: and there are endless legends not only about the exchange of techniques, but of the reappearance of actual timbers taken from ships and re-used in buildings.

A typical timber town may still be seen today in Suffolk (East Anglia), at Lavenham. In 1960, after the first "listing" of historic buildings under the post-war town planning legislation, the local authority embarked upon what was perhaps the first careful and specific study of an historic town, with the emphasis upon methods of conserving its identity and its characteristic buildings. (Figure 1).This survey was entrusted to the team of Donald Insall and Associates and the subsequent Report[1] was to become a sought-after example of a new methodology.

Each building designated by the listing was examined in detail, from the cellar to the roof-space; and a massive technical "dossier" became gradually available. On the basis of this, a

1. D.INSALL, *Lavenham: Past, present, future*, West Suffolk County Council, 1961.

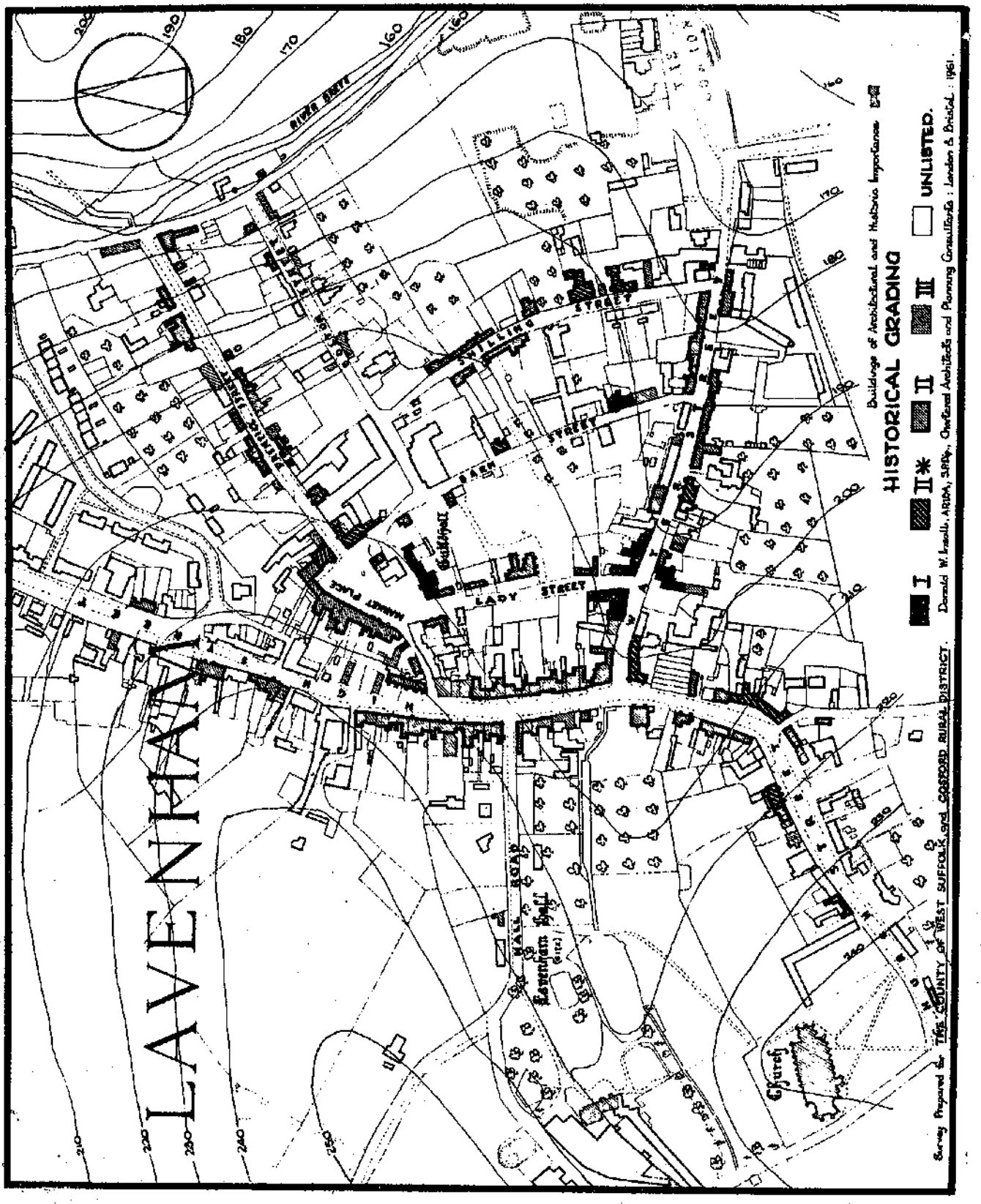

Fig.1. Grading of historic buildings in Lavenham

careful Report was prepared. This study explored the most typical problems encountered in maintaining timber buildings. Their causes proved to be at least twofold: the shortcomings of original construction had been matched by common mistakes in their continuing care and repair. Oak-framed buildings had proved to be astonishingly long-lasting, flexible and adaptable. But in many instances, an original house of quality was almost lost among additions and extensions of little merit. Sometimes in turn, these had harmed original work, by damaging the integrity of its structural geometry and failing to protect it against the elements. The actual ageing of the oak proved to be of almost no effect compared with that of damp - whether attracte upwards through the brick foundation courses, or misdirected at roofing and framing timbers by leaking roofs and downpipes. (Figure.2) By identifying those parts of each "listed" building which were truly of value, the survey concentrated attention upon removing damaging elements, and upon encouraging specific and positive repairs. Through the British system of *Historic Buildings Grants*, financial help was made available to owners,

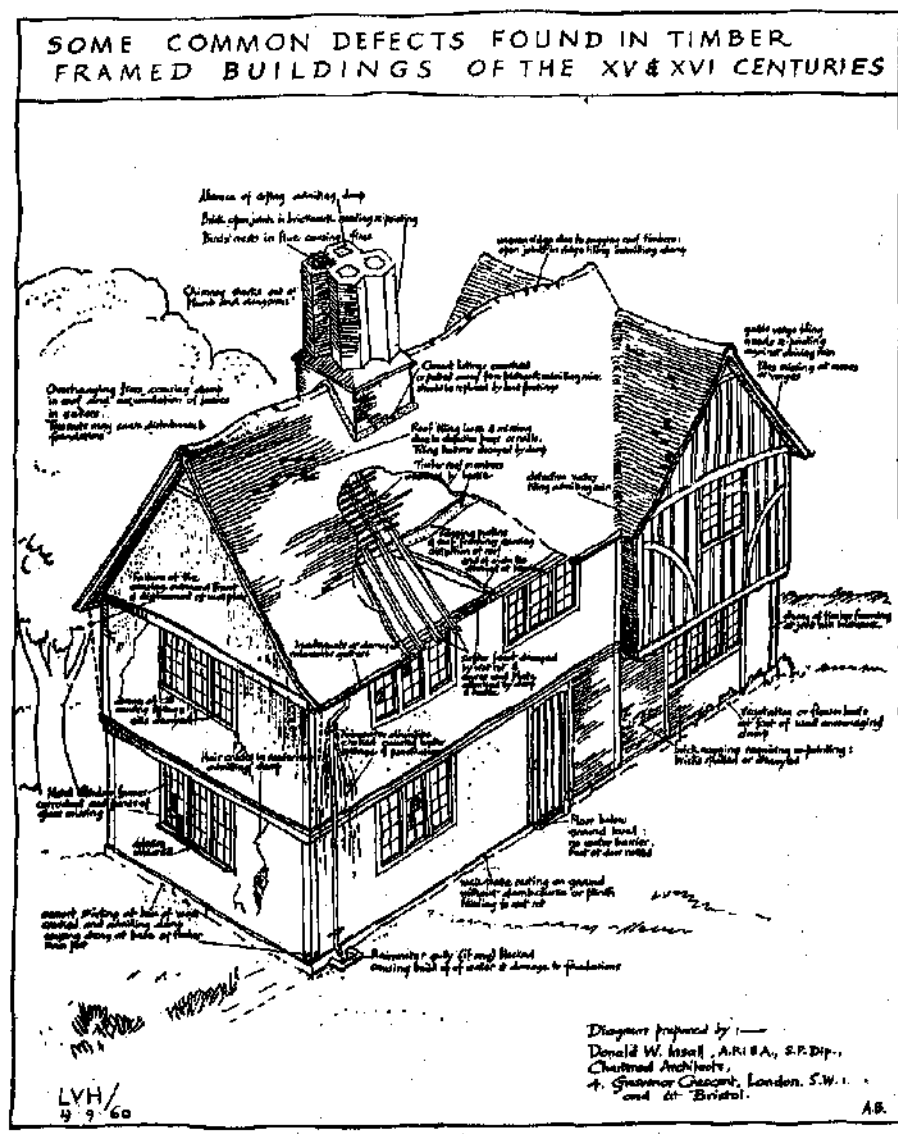

Fig.2. Some common defects found in timber framed buildings of the XV. and XVI. centuries.

backed by informed technical advice. By means of daily "developmental control" under the Planning Acts, the continuing change and alteration of buildings could be not so much stopped as guided towards releasing the latent merits of each property. Until Local Government reorganisation in Britain, the Planning Authority retained the authors of the Lavenham Study in a consulting capacity, so that at any moment of potential change, when an owner might be considering conversion and repairs, a visit could be made, the building inspected, and its special features kindly and correctly treated.

A typical technical service proved to be the restraint of an itch to "strip" all plaster work and finishes, so as to expose and express the original oak skeleton. In many cases, indeed, this is appropriate, and was clearly intended by the original builders. Oak members had been carefully finished, carved and decorated and were quite evidently meant to be seen, (Figure 3) while subsequent owners had often plastered them in. But in others, the original timbers were obviously not intended to be left open, and subsequent stripping of finishes had sometimes exposed them quite unnecessarily to deterioration. Their construction was not designed to combat exposure, and in many cases the whole architectural effect had been rendered a nonsense by exposing the "bones"

Repairs to a timber structure should first of all look to the framing, and above all to its geometry and its joints. Framing was almost always triangulated against "racking" by diagonal (and sometimes curved) wind-braces, housed between beams and vertical posts, and between roof trusses and longitudinal purlins. Many times, these proved to have been cut and interrupted by later openings and adaptations. In some unfortunate buildings, even the main tie between the feet of triangulated roof members had been cut in this way. New

Fig.3. Lavenham Guildhall

doorways between attic rooms, and openings raised for better headroom were frequent culprits. Another source of weakness often to be found in Lavenham was where, in a building whose upper floor had originally been "jettied" and projected over its lower walls, its lower storeys had been enlarged by moving walls outwards to match those above. Then not only is the span of the first floor extended, but it loses a positive gain in the "counterweight" effect of upper walls, intended to load beam ends and in turn push upwards and relieve them at mid span.

The jointing system is of course of key importance in all timber construction. The old carpenters and joiners brought to their task an astonishing degree of sophistication: and the precise design execution of the joints shows with what care and skill this work was done. Once fabricated, the individual members were slotted together in a perfect fit, and generally secured by wooden pegs. For extra finesse, the pegs themselves were sometimes oven-dried before use, so that they might expand snugly and tightly into place. Surviving pegholes and mortices sometimes today give a clue to earlier forms, and to an original construction since altered. But however clearly the joints have been made, it is still here that movements will accumulate, and here that water will penetrate and lie. The pegs themselves tend naturally to rot; and the joints may then open and come unseated. Consequently attention must be given first to the structural triangulation, and secondly to the condition of the joints.

Where timbers have rotted and renewal is necessary, the identity of each timber member is best preserved. This is tradionally done by splicing-on replacements for defective areas, preferably in a similar timber and in such a way that the original post or beam remains as a unit. The joints between members are thus reinstated as joints, and not elided into an unnecessarily continuous system. So the integrity of the structure is retained, without introducing complex new movements and stresses.

The "dentistry" tradition of repair, by making good, as it were, the individual "teeth", has more recently taken a new turn with the wider use of synthetic resins. It now becomes possible, having supported a damaged member, to cut away defective and rotten parts and to refill the hole with an inert and stable "stopping", keyed intimately into place within it. The junctions made in this way are strong, although plainly they may come under stress, as will any interface between materials of unequal characteristics. One might well expect any thermal movement, or any relative crushing or distension differences, or indeed any condensation, or any easings and adaptations between previously settled and newly inserted structure, to take place here. In practice however, and in structures which are already framed and jointed, it becomes possible to take up most movements within the normal structural joints. Wherever access is difficult to contrive and sometimes for reasons of economy, these "dentistry" methods can be valuable.

The Lavenham Study suggests that it is rarely essential and sometimes impossible to restore the original straight lines of a timber frame. This is because timber adapts itself gradually to circumstances, and takes up whatever shape its circumstances prescribe. Even timber wedges (and especially softwood ones) are quickly distorted and compressed, so may rapidly fail in

their function. But the ability of timber to come to terms with its situation and function is remarkably useful. Wood, it was found, suffers far more from beetle and parasitical fungi,which feed upon its cellulose, than from almost any degree of distortion by loads.

Timber structures in Britain, and wooden elements among masonry and harder materials, do suffer severely from damp. They are prone to the devastating attacks of some wood fungi, and notably of true "dry rot". This is the fungus *merulius lachrymans*, which, once established, can attack not only wet but even dry timber, to which it brings its own moisture supply. In hardwood areas like those of Lavenham's forest oak, wet timber is also vulnerable to beetle, whose larvae burrow away its soft, damp structure. English oak has a pronounced variation between heartwood and the sapwood nearer the bark, the deathwatch beetle being particularly partial to the latter. It is essential not only to cut away areas of serious infestation, but to poison and discourage the pests before the structure has become too seriously weakened. In practice, this work today is often undertaken by specialist firms who may be prepared to guarantee the efficacy of the completed treatment.[2]

2. For further reading: W.P.K.FINDLAY and J.G.SAVORY, *Dry Rot in Wood*, London: H.M.S.O. Forest Products Research Bulletin No.1, 1960.

In all these and countless other ways, the Lavenham Study laid bare the technical problems of maintaining timber structures. At the same time, the care of a whole historic town became a matter of special concern, as an exercise in town planning and in active conservation.

The success of the Project has been considerable. The public will never know perhaps what horrors and architectural indignities their town has escaped: because so many proposals have been improved out of all recognition by negotiation and patience in daily development control. True, there is less

ig.4. Houses on Lady Street with jettied upper storeys.

scope for the untrammelled and original masterpiece: but the general tenor of architectural manners is high, whether in conversion or in new buildings. (Figure 4) If there are weaknesses of the system these are probably in the thoughtless repetition of elements like Georgian window proportions, whose acceptance in one context may lead to their unconsidered repetition in another. More insidious and deadly are some of the trappings of detail, including even those too small to require planning consent, but which proliferate in any self-conscious neighbourhood, all the world over. In Britain, carriage-lamps and fake "crown bullion" glazing falls squarely within this category. (Figure 5)

Unquestionably today, Lavenham has become vastly more conscious of her charms: and this consciousness has brought not only a higher degree of care but, with wider recognition of the desirability of the place, greatly enhanced property values. This in turn both helps, and hinders-helps, by making money available for property improvement, but in turn hinders, by raising the market value of unimproved and unrestored houses, whose rescue can become a labour of love for those with time available for the task. In turn again, this has pronounced social indications; and Lavenham has developed a strong trend towards increasing occupation by retired people, with more money and fewer children than used to play in its streets. Sometimes too, the economic property-improvement equation no longer applies, and the high cost of acquisition, plus repair and improvement, is not always equalled by values "as improved". The equation in its imbalance in turn deters the young more than the old, to whom the ultimate cash balance may not be the sole criterion. But the effect is again is to intensify a trend and to increase the social disparity.

So, what of the future of Lavenham? To a large extent, the rot has been stopped. Technical means of conservation are much more widely understood and appreciated. Many unique timber buildings have already to a large extent been rescued and very few now stand empty, or disused. The next generation of problems

Fig.5. Shilling Street, Shilling Grange, Lavenham: House restored in 1935. The unrestored half is in different ownership.

to be solved are at a larger scale: they concern the economic and social structure of an increasingly specialised country town, whose remarkable architecture presents only one facet of its very particular quality. Conservation is not something achieved at one stroke, but by continuing and patient care and both buildings and towns deserve energetic and unremitting attention, if they are to survive with success and integrity.

İNGİLTERE'NİN AHŞAP YAPILARI VE ÖNCÜ BİR TARİHİ ÇEVRE ÇALIŞMASI

ÖZET

İngiltere'nin büyük çeşitlilik gösteren yerel yapı gereçleri, ülkenin göreli küçüklüğüne karşın zengin bir yöre mimarlığı yaratılmasını nedenlemiştir. En sık rastlanan yapı gereçlerinden olan ahşabın yüzyıllardır süregelen bir gelenek oluşturduğu özellikle gözlenebilmektedir.

Suffolk (East Anglia) kesiminde yer alan Lavenham kasabası, hemen hemen tüm yapıları bu gelenek doğrultusunda üretilmiş bir ahşap yöre mimarlığı örneğidir. 1960 yılında tamamlanan tescil işleminden sonra yerel yönetim, İngiltere'de belki ilk kez olmak üzere, tarihi bir kasabanın ayrıntılı biçimde incelenmesi işini yazarın öncülüğünde çalışan bir ekibe vermişti. Bu çalışmada her yapı önce tek tek ele alınmış, ahşap yapıların değer ve sorunları ayrıntılarıyla saptanmış, onarım ve sağlıklaştırma önerileri geliştirilerek mülk sahiplerinin resmi onarım kredisi fonlarından yararlanmaları sağlanmıştır.

Lavenham'da gerçekleştirilen çalışmanın ortaya koyduğu gerçekler arasında şunlar sayılabilir:

Öncelikle, İngiltere'nin meşe ağaçlarından elde edilen ahşapla yapılmış bu tür yapılar sanıldığından çok daha uzun ömürlü, esnek ve uyarlanabilir bulunmuştur. Öte yandan, nem sorunlarının özellikle yaygın olduğu izlenmiştir. Bir başka yaygın sorun, yükler nedeniyle ahşapta beliren eğilme, dönme, çalışma gibi biçim değişiklikleridir. Ancak, bunların düzeltilmesi çoğunlukla gereksiz, kimi durumlarda da olanaksız bulunmuştur. Çözümü zorunlu olan en yaygın sorun ise ahşabın çürümesine yol açan kurt ve mantar gibi asalakların varlığıdır. Tüm bu noktalarda yapılan çalışmalarla Lavenham projesi, gerek tek yapı gerekse yerleşme ölçeğinde sürdürülecek incelemeleri örnekleyen öncü bir araştırma niteliğindedir.

Teknik açıdan proje önemli başarılar sağlamıştır. Bugün çok sayıda yapı gerekli onarım işleri tamamlanmış olarak yeniden kullanıma açılmış bulunmaktadır. Toplumsal ve ekonomik yönden ise bir yandan korunacak yapılar için yaygın bir kamu oyu bilinçlenmesi sağlanırken öte yandan bu yapıların piyasa değerlerinin artması önlenememiştir. Bunun bir toplumsal sonucu, Lavenham kasabası çocuksuz fakat paralı emeklilerin çekici buldukları bir yerleşme olmuştur. Dolayısıyla, bundan sonra çözümü aranacak sorunlar artık teknik olmaktan çok toplumsal nitelik taşıyacaktır. Unutulmamalıdır ki çevre koruma bir solukta bitirilecek bir eylem değil, sürekli ve sabırlı bir uğraşı gerektiren bir görevdir.