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## Chapter 8

# Causation

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### 8.1 Theory

Causation has already been mentioned. It is the relationship between cause and effect. It is an extremely important concept in the context of liability. A wrongful act may trigger a series of events which eventually results in damage being suffered. This is called the 'chain of causation' (see Figure 8.1).

The loss and/or expense must be direct in the sense of remoteness and also in the sense of the chain of causation, that is, the relationship between cause and effect. The matter on which the contractor seeks to rely must be linked, without interruption, to the loss suffered. Therefore if the cause is not the matter, but some intervening event,<sup>1</sup> there will be no liability and no claim. To put the situation another way, the loss and/or expense must have been caused by the breach or act relied on and not merely be the occasion for it.<sup>2</sup>

Two simple examples may be contrasted. In the first one, a variation is ordered which necessitates plant lying idle for some days. The plant is needed for the original work, but at a very late stage the work is varied and so the plant is not needed. Suppose the plant is hired in. The contractor's hire charges, subject to any re-letting or the plant owner accepting an early return, would be a direct loss and, therefore, reimbursable. In the second example, a variation substitutes slates for roof tiles. After the contractor has ordered the new slates, problems are encountered at the slate quarry, which mean that the supply of slates is interrupted so that the supplier is in breach of the supply contract. The delay and disruption to the contract works consequent upon the interruption of supply is clearly a direct consequence of the supplier's breach of the supply contract and only an indirect consequence of the variation. It is in fact the direct consequence of an intervening event – the supplier's breach. In such a case, it is for the contractor to look, if to anyone, to the supplier for recompense. The principles of causation have been set out in classic statements:

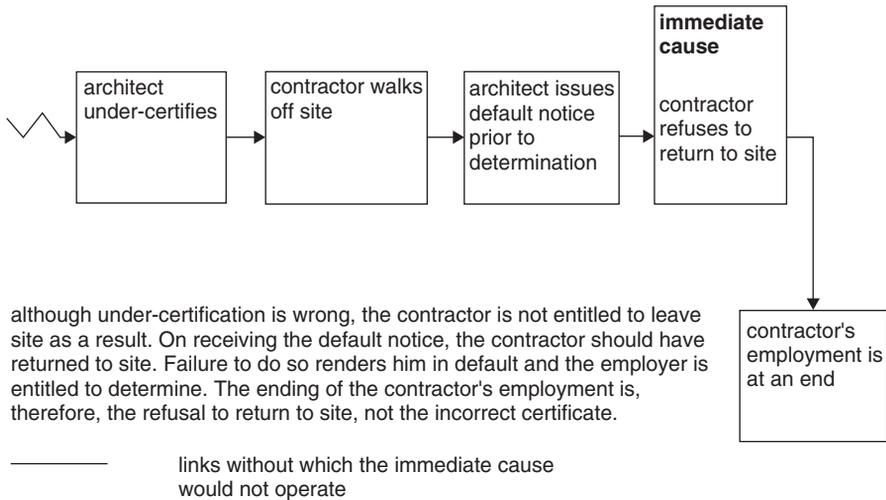
'It seems to me that there is no abstract proposition, the application of which will provide the answer in every case, except this: one has to ask oneself what was the effective and predominant cause of the accident that happened, whatever the nature of that accident may be'<sup>3</sup>

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<sup>1</sup> The legal term used to be expressed as *novus actus interveniens* – a new act coming in between.

<sup>2</sup> *Weld-Blundell v Stevens* [1920] AC 956.

<sup>3</sup> *Yorkshire Dale Steamship Co Ltd v Minister of War Transport* [1942] AC 691 at 698 per Viscount Simon LC.



although under-certification is wrong, the contractor is not entitled to leave site as a result. On receiving the default notice, the contractor should have returned to site. Failure to do so renders him in default and the employer is entitled to determine. The ending of the contractor's employment is, therefore, the refusal to return to site, not the incorrect certificate.

Figure 8.1 The chain of causation

‘This choice of the real or efficient cause from out of the complex of facts must be made by applying commonsense standards. Causation is to be understood as the man in the street, and not as either the scientist or the metaphysician, would understand it.’<sup>4</sup>

‘Causation is a mental concept, generally based on inference or induction from uniformity of sequence as between two events that there is a causal connection between them . . . . The common law, however, is not concerned with philosophic speculation, but is only concerned with ordinary everyday life and thoughts and expressions . . . .’<sup>5</sup>

Causation has been held to be purely a question of fact to be decided on the basis of common sense.<sup>6</sup> In *P & O Developments Ltd v Guy's & St Thomas' National Health Service Trust*, Judge Bowsher aptly summarised the position so far as the building industry was concerned:

‘The test is what an informed person in the building industry (not the man in the street) would take to be the cause without too microscopic analysis but on a broad view.’<sup>7</sup>

Everything depends on the facts and circumstances. Some situations are very complex and it will be important to identify the damage from which it was intended to protect a party.<sup>8</sup> A graphic example of the concept of causation is to be found in a case where negligent architects issued defective interim certificates and the contractors withdrew from site.<sup>9</sup> The contractor lost its claim against the negligent architects, because it

<sup>4</sup> *Yorkshire Dale Steamship Co Ltd v Minister of War Transport* [1942] AC 691 at 706 per Lord Wright.

<sup>5</sup> *Monarch Steamship Co Ltd v Karlshamns Oljefabriker (AB)* [1949] AC 196 at 228 per Lord Wright.

<sup>6</sup> *Leyland Shipping Co Ltd v Norwich Union Fire Insurance Society Ltd* [1918] AC 350.

<sup>7</sup> [1999] BLR 3 at 9 per Judge Bowsher.

<sup>8</sup> *Skandia Property (UK) Ltd v Thames Water* [1999] BLR 338.

<sup>9</sup> *Lubenham Fidelity & Investment Co v South Pembrokeshire District Council and Wigley Fox Partnership* (1986) 6 Con LR 85.

broke the chain of causation by persisting in suspension of the Works despite the service by the employer of a preliminary notice of default prior to determination. The contractor alone, not the architects, was responsible for the termination of the contract. Although the architect's negligence was the source of the events, it was overtaken and overwhelmed by the contractor's serious breach of contract.

A somewhat more subtle example concerned a claim against insurers.<sup>10</sup> This followed the Hatfield train disaster in 2000. The disaster was caused by a broken rail which itself was caused by a particular form of cracking. Speed restrictions were imposed by Railtrack as an emergency measure at sites where that particular form of cracking was known to exist. Various train companies alleged that they had suffered losses as a result of the speed restrictions. The insurers relied upon a clause in the policies which excluded damage caused by wear and tear. The court had to decide what was the actual cause of the losses. The matter finished in the Court of Appeal. The court at first instance had held that the wear and tear was simply the occasion for the loss, but that actual cause was the speed restrictions. The Court of Appeal disagreed and held that the cause of the speed restrictions was the wear and tear. There was no break in the chain of causation and no intervening event. The wear and tear caused the speed restrictions which, in turn, caused the losses. Therefore, the insurers were entitled to rely on the exclusion clause.

In *Balfour Beatty Ltd v Chestermount Properties Ltd* the court commented on causation as applied to extensions of time:

‘There may well be circumstances where a relevant event has an impact on the progress of the works during a period of culpable delay but where that event would have been wholly avoided had the contractor completed the works by the previously-fixed completion date. For example, a storm which floods the site during a period of culpable delay and interrupts the progress of the works would have been avoided altogether if the contractor had not overrun the completion date. In such a case it is hard to see that it would be fair and reasonable to postpone the completion date to extend the contractors’ time.’<sup>11</sup>

Where there appear to be concurrent causes, one being the responsibility of one party and the other being the responsibility of the other party, the correct test to apply is not whether one of the causes is the sole cause or the dominant cause. The correct test has been held to be whether a cause is an effective cause.<sup>12</sup> Where there are several possible causes, the burden of proof on the contractor is to show that one cause is more likely than the others.<sup>13</sup>

## 8.2 Use of networks

Computers are very commonly used to generate graphical information to assist in presenting a claim. Such graphics cannot usually be said to ‘support’ the claim in the same way as hard evidence, such as correspondence and site minutes, will support

<sup>10</sup> *Midlands Mainline Ltd & Others v Eagle Star Insurance Co Ltd* [2004] EWCA Civ 1042.

<sup>11</sup> *Balfour Beatty Ltd v Chestermount Properties Ltd* (1993) 62 BLR 1 at 34 per Coleman J.

<sup>12</sup> *Loftus-Brigham v Ealing LBC* (2004) 20 Const LJ 82.

<sup>13</sup> *Plater v Sonatrach* (2004) CILL 2073.

it, but if the graphics are used sensibly, they can pictorially represent what the documentary evidence proves happened on site so as to make it easier to understand. Architects, trained to visualise, usually find that such things as histograms, graphs and pie charts explain what the contractor is trying to say better than thousands of words. A particularly useful tool is the computer planning program. There are many versions on the market. Both architects and contractors will find it helpful in preparing programmes for construction works and in analysing the programmes and the effects of delays. They also have a part to play in extensions of time and the analysis of loss and expense, whether prolongation or disruption. However, it is important to remember that 'it is merely a tool which must be considered with the other evidence . . . The evidence of Programming Experts may be of persuasive assistance.'<sup>14</sup>

The courts have shown themselves ready to accept such analysis if properly carried out.<sup>15</sup> Of course, there is nothing magical about computers. They simply do at great speed what would take the ordinary mortal a considerable time to achieve. The particular tool used to programme and analyse is the network or the precedence diagram also called the PERT (Performance Evaluation and Review Technique) chart. All these charts provide a way of connecting together the operations on site in a series of logic links (e.g. pouring concrete cannot commence until trenches are dug, etc.). They also provide the means of delaying some activities and bringing forward others. For example, pouring concrete can start before trench digging is entirely completed. They enable the critical path or paths to be identified and delays to be introduced. Not least, resources can be added. This is not the place to venture even a brief description of the preparation of a network and there are many excellent books on the topic. Particularly to be commended are those books published to assist in understanding unfathomable official software 'help'. Most of them include excellent explanations of the theory behind programming.

All architects and project managers should use computerised programmes to monitor progress and assist in analysing claims. Contractors should routinely submit detailed programmes on disk as well as in hard copy. If this was done, all parties would be assisted in making prompt claims and speedy responses, claim making and understanding would be eased and disputes avoided or at least made less frequent. Programmes could be prepared to show as-built compared to intended progress and known employer-generated delays could be taken out to examine the likely situation had those delays not occurred. The reverse operation can be tried. These techniques are sometimes known as the 'subtractive' or 'additive' methods. Provided accurate records are available, the only limit to possible methods of analysis are the limits to the architect's or the contractor's ingenuity.

Often, all that is required is to take the computerised version of the contractor's original programme, input all the delays and check the result. This is the 'impacted as-planned' technique which is arguably the simplest form of critical path based analysis. Although it is not very sophisticated, it is very useful where the total delays are quite extensive. The result shows what would have happened if the contractor had continued to progress the Works exactly as shown on its original programme without taking any mitigating steps. It will readily be appreciated that it represents

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<sup>14</sup> *Mirant Asia-Pacific Construction (Hong Kong) Ltd v Ove Arup and Partners International Ltd* [2007] EWHC 918 (TCC) at paragraph 575 per Judge Toulmin.

<sup>15</sup> *John Barker Construction Ltd v London Portman Hotels Ltd* (1996) 50 Con LR 43.

the maximum extension of time to which the contractor could conceivably be entitled. As such it forms a useful baseline. Because the logic links will determine effect, the most important part is to ensure they are properly represented.

On the other hand, it should be borne in mind that computer programmes are not the solution to all the ills which afflict contractor's claims and it is easy to be seduced by the slick visuals in a typical software package into thinking otherwise. Moreover, networks are susceptible to even the slightest change in logic to produce vastly different results. The activities in the programme are linked in various ways, generally referred to as 'Start start', 'Start finish', 'Finish start' or 'Finish finish'. For example, 'Start start' means that the start of one activity is dependent on the start of another while 'Finish start' means that the start of activity is dependent on the finish of another. Each link may be qualified by periods of lead or lag time. Obviously, to link the starts of a number of activities will result in a different conclusion than if finish and start dates are linked in the same activities when a delay is inserted into the programme.

It is possible to minimise or exaggerate the effect of any future delay by the way in which the activities are linked. It should not need saying that the links should, so far as reasonably possible, reflect the true position and architects must check the relationships for possible errors. A court has recently questioned whether certain assumptions in regard to a critical path were necessarily accurate in all circumstances and emphasised the need to check carefully that critical path delays did in fact translate to delays to the completion date.

'The experts have agreed that the delays to [certain structures] were critical delays since those buildings were on the critical path of the project at the relevant time. Ordinarily therefore one would expect, other things being equal, that the project completion date would be pushed out at the end of the job by the same or a similar period to the period of delay to those buildings. However, as experience shows on construction sites, many supervening events can take place which will falsify such an assumed result. For example, the Contractor may rearrange his programme so that other activities are accelerated or carried out in a different sequence thereby reducing the initial delays. Or the Contractor may apply additional resources to the delayed activities in order to accelerate them and thereby reduce the delay to those activities. Or, as in the present case, where the Employer was itself responsible for critical delays prior to the failure of the ground treatment works, it may be that extensions of time granted by the Employer cover part of the same period as delays under consideration. All of these are possibilities which need to be investigated in order to establish whether the assumption that a critical delay locked into the project in January 2003 does in fact lead to a delay to the completion of the whole project some 16 months later.'<sup>16</sup>

*Balfour Beatty Construction Ltd v The Mayor and Burgesses of the London Borough of Lambeth*<sup>17</sup> concerned an application for summary judgment following an adjudication decision. Its interest lies in the references to the use of programmes for estimat-

<sup>16</sup> *Costain Ltd v Charles Haswell & Partners Ltd* (2009) 128 Con LR 154 at 234 per Richard Fearnough QC sitting as a Deputy Judge of the High Court.

<sup>17</sup> [2002] BLR 288.

ing extensions of time. As part of its submission to the adjudicator, Balfour Beatty referred to the ‘most widely recognised and used’ delay analysis methods:

- (I) *Time Impact Analysis* (or “*time slice*” or “*snapshot*” analysis). This method is used to map out the impacts of particular delays at the point in time at which they occur permitting the discrete effects of individual events to be determined.
- (II) *Window analysis*. For this method the programme is divided into consecutive time “windows” where the delay occurring in each window is analysed and attributed to the events occurring in that window.
- (III) *Collapsed as-built*. This method is used so as to permit the effect of events to be “subtracted” from the as-built programme to determine what would have occurred but for those events.
- (IV) *Impacted plan* where the original programme is taken as the basis of the delay calculation, and delay faults are added into the programme to determine when the work should have finished as a result of those delays.
- (V) *Global assessment*. This is not a proper or acceptable method to analyse delay.<sup>18</sup>

Later the judge said:

‘By now one would have thought that it was well understood that, on a contract of this kind, in order to attack, on the facts, a Clause 24 certificate for non-completion (or an extension of time determined under Clause 25), the foundation must be the original programme (if capable of justification and substantiation to show its validity and reliability as a contractual starting point) and its success will similarly depend on the soundness of its revisions on the occurrence of every event, so as to be able to provide a satisfactory and convincing demonstration of cause and effect. A valid critical path (or paths) has to be established both initially and at every later material point since it (or they) will almost certainly change. Some means has also to be established for demonstrating the effect of concurrent or parallel delays or other matters for which the Employer will not be responsible under the contract.’<sup>19</sup>

Although it is possible to agree in principle with this statement, it does not mean that a programme, adjusted as indicated, must be used in just that way on every occasion. It is perfectly possible to determine a critical path in words and to deduce the effect of delays by applying reason rather than computer technology. That has been made very clear in a Scottish case:

‘In my opinion the pursuers clearly went too far in suggesting that an expert could only give a meaningful opinion on the basis of an as-built critical path analysis. For reasons discussed below (at paragraphs [36]–[37]) I am of opinion that such an approach has serious dangers of its own. I further conclude, as explained in those paragraphs, that [the pursuer’s expert’s] own use of an as-built critical path analysis is flawed in a significant number of important respects. On that basis, I conclude that that approach to the issues in the present case is not helpful. The

<sup>18</sup> [2002] BLR 288 at 292 per Judge Lloyd.

<sup>19</sup> [2002] BLR 288 at 302 per Judge Lloyd.

major difficulty, it seems to me, is that in the type of programme used to carry out a critical path analysis any significant error in the information that is fed into the programme is liable to invalidate the entire analysis. Moreover, for reasons explained by [the defender's expert] (paragraphs [36]–[37] below), I conclude that it is easy to make such errors. That seems to me to invalidate the use of an as-built critical path analysis to discover after the event where the critical path lay, at least in a case where full electronic records are not available from the contractor. That does not invalidate the use of a critical path analysis as a planning tool, but that is a different matter, because it is being used then for an entirely different purpose. Consequently I think it necessary to revert to the methods that were in use before computer software came to be used extensively in the programming of complex construction contracts. That is essentially what Mr Whitaker did in his evidence. Those older methods are still plainly valid, and if computer-based techniques cannot be used accurately there is no alternative to using older, non-computer-based techniques.<sup>20</sup>

At appeal the Inner House of the Court of Session reinforced that position:

‘the decision-maker is at liberty to decide an issue of causation on the basis of any factual evidence acceptable to him. In that connection, while a critical path analysis, if shown to be soundly based, may be of assistance, the absence of such an analysis does not mean that a claim for extension of time must necessarily fail.’<sup>21</sup>

Computer technology is very useful in calculating delays to a construction programme but, whatever its adherents may say, it is not foolproof. Great care must be taken in applying the principles and drawing conclusions. One has only to look at the reported cases where experts for both sides hold widely differing views and obtain completely different results after feeding in to the computer what appears to be identical data. In *Skanska Construction UK Ltd v Egger (Barony) Ltd*,<sup>22</sup> the court was dismissive of the analysis carried out by a very experienced expert in this field acting for Egger, but appreciative of a planning consultant for Skanska with ‘hands on’ experience of the particular project:

‘He impressed me as someone who was objective, meticulous as to detail, and not hide bound by theory as when demonstrable fact collided with computer programme logic.’<sup>23</sup>

In contrast, Egger's expert produced many hundreds of pages of report supported by 240 charts. The court remarked that the reliability of the expert's sophisticated impact analysis was only as good as the data put in. This is self-evidently true of course, but it is refreshing to hear a court say so. The danger is that parties are beguiled by what appears to be the unarguable science of programme planning. In fact, what strongly emerges from any consideration of this approach is that, like much

<sup>20</sup> *City Inn Ltd v Shepherd Construction Ltd* [2007] CSOH 190 at paragraph 29 per Lord Drummond Young upheld on appeal [2010] ScotCS CSIH 68.

<sup>21</sup> *City Inn Ltd v Shepherd Construction Ltd* [2010] ScotCS CSIH 68 at paragraph 42 per Lord Osborne.

<sup>22</sup> [2004] EWHC 1748 (TCC).

<sup>23</sup> *Skanska Construction UK Ltd v Egger (Barony) Ltd* [2004] EWHC 1748 (TCC) at paragraph 415 per Judge Wilcox.

else in life, conclusions drawn from an examination of computer simulations have to be treated with a degree of scepticism.

It is very easy for a contractor to make a mistake in calculating elements of its claim, whether it be a matter of extra time or money or a combination of both. In *McAlpine Humberoak Ltd v McDermott International Inc (No 1)*, the Court of Appeal identified flaws in the methodology adopted by the very experienced civil engineer engaged by the contractor to prepare its claim. The engineer's approach assumed that if one man was working for one day on a particular variation order, the whole contract was delayed for that day. Thus in one instance an inspection took no more than an hour and £39 was claimed, but the engineer allowed a day's delay to the whole of the work. A more serious defect was that the claim assumed that the whole of the workforce planned for a particular activity was engaged continuously on that activity from start to finish although that situation was hardly likely.<sup>24</sup>

### 8.3 Float

This is a term often used in connection with programming, especially with network analysis. Essentially, it is the time difference, if any, between the time required to perform a task and the time available in which to do it. If an activity has five days of float, it means that the activity could be extended by up to five days without affecting the completion date of the project. Alternatively, the activity could start up to five days late without any overall delaying effect. One of the definitions of a 'critical activity' is that it has no float. In other words, there is no scope for any delay at all before the completion date of the project is affected.

Much debate rages about the 'ownership' of float in a programme. Contractors will usually claim it for themselves, sometimes to the disadvantage of sub-contractors.<sup>25</sup> A contractor may argue that an extension of time is due even if a non-critical activity is delayed. The argument is sometimes extended to the effect that if a contractor programmes to complete a ten week contract in nine weeks, the extra week is the contractor's float and if the project is delayed by a few days, an extension of time will be due, even if the contractor finishes before the completion date. That is manifestly wrong. The better view is that no one owns the float. If an activity has a float of three days and this float is used, because the architect is late in providing information, the contractor has no entitlement to an extension of time. That is not to say, of course, that the contractor has no claim to loss and/or expense due to disruption, but that is a different matter.

In *Ascon Construction Ltd v Alfred McAlpine Construction Isle of Man Ltd* the judge made a very useful analysis of the concept of float:

'Before addressing those factual issues I must deal with the point made by McAlpine as to the effect of its main contract "float", which would in whole or in part pre-empt them. It does not seem to be in dispute that McAlpine's programme contained a "float" of five weeks in the sense, as I understand it, that had work started on time and had all sub-programmes for sub-contract works and for

<sup>24</sup> (1992) 58 BLR 1 at 25 per Lloyd LJ.

<sup>25</sup> *Ascon Contracting Ltd v Alfred McAlpine Construction Isle of Man Ltd* (2000) 16 Const LJ 316.

elements to be carried out by McAlpine's own labour been fulfilled without slippage the main contract would have been completed five weeks early. McAlpine's argument seems to be that it is entitled to the "benefit" or "value" of this float and can therefore use it at its option to "cancel" or reduce delays for which it or other sub-contractors would be responsible in preference to those chargeable to Ascon.

In my judgment that argument is misconceived. The float is certainly of value to the main contractor in the sense that delays of up to that total amount, however caused, can be accommodated without involving him in liability for liquidated damages to the employer or, if he calculates his own prolongation costs from the contractual completion date (as McAlpine has here) rather than from the earlier date which might have been achieved, in any such costs. He cannot, however, while accepting that benefit as against the employer, claim against the sub-contractor as if it did not exist. That is self-evident if total delays as against sub-programmes do not exceed the float. The main contractor, not having suffered any loss of the above kinds, cannot recover from sub-contractors the hypothetical loss he would have suffered had the float not existed, and that will be so whether the delay is wholly the fault of one sub-contractor, or wholly that of the main contractor himself, or spread in varying degrees between several sub-contractors and the main contractor. No doubt those different situations can be described, in a sense, as ones in which the "benefit" of the float has accrued to the defaulting party or parties, but no-one could suppose that the main contractor has, or should have, any power to alter the result so as to shift that "benefit". The issues in any claim against a sub-contractor remain simply breach, loss and causation.

I do not see why that analysis should not still hold good if the constituent delays more than use up the float, so that completion is late. Six sub-contractors, each responsible for a week's delay, will have caused no loss if there is a six weeks' float. They are equally at fault, and equally share in the "benefit". If the float is only five weeks, so that completion is a week late, the same principle should operate; they are equally at fault, should equally share in the reduced "benefit" and therefore equally in responsibility for the one week's loss. The allocation should not be in the gift of the main contractor.

I therefore reject McAlpine's "float" argument. I make it clear that I do so on the basis that it did not raise questions of concurrent liability or contribution; the contention was explicitly that the "benefit", and therefore the residual liability, fell to be allocated among the parties responsible for delay and that the allocation was entirely in the main contractor's gift as among sub-contractors, or as between them and the main contractor where the latter's own delay was in question.<sup>26</sup>

This supports the view that float is owned by no one. A useful and neat summary of the position has been set out by Nicholas Carnell:

'In fact consideration of the role of float from first principles shows that the debate is less complex than might be supposed.

(1) In the majority of standard form contracts, the programme is not a contract document. The contractor's obligation is to carry out and complete the works by the completion date, rather than by any specific activity date.

<sup>26</sup> (2000) 16 Const LJ 316 at 338 per Judge Hicks.

(2) Accordingly, unless the effect of delaying a particular activity is to cause delay to the completion date of the works, the programme is to be regarded as a planning tool and no more.

(3) Within the constraints of the need to complete the works by the date for completion, the contractor can programme the works as he wishes.

(4) Similarly, if the employer's conduct causes the contractor to use up some or all of the float without causing delay to the works, the consequences may be disruption if the contractor can identify the need to deploy additional resource, but it will not entitle him to any extension of time.<sup>27</sup>

The judgment in *How Engineering Services Ltd v Lindner Ceilings Partitions plc* gives support to this view.<sup>28</sup>

A more recent case appears to have thrown some doubt on that interpretation:

'Under the JCT conditions, as used here, there can be no doubt that if an architect is required to form an opinion then, if there is then unused float for the benefit of the contractor (and not for any other reason such as to deal with pc or provisional sums or items), then the architect is bound to take it into account since an extension is only to be granted if completion would otherwise be delayed beyond the then current completion date. This may seem hard to a contractor but the objects of an extension of time clause are to avoid the contractor being liable for liquidated damages where there has been delay for which it is not responsible, and still to establish a new completion date to which the contractor should work so that both the employer and the contractor know where they stand. The architect should in such circumstances inform the contractor that, if thereafter events occur for which an extension of time cannot be granted, and if, as a result, the contractor would be liable for liquidated damages then an appropriate extension, not exceeding the float, would be given. In that way the purposes of the clause can be met: the date for completion is always known; the position on liquidated damages is clear; yet the contractor is not deprived permanently of 'its' float.'<sup>29</sup>

The rationale behind this statement is not immediately apparent. It is certainly *obiter*, because the judge said later that it was not certain that there was any float in the programme under consideration. It seems that the judge was referring to the kind of float which a contractor may put in its programme at the end of all activities, to give itself a cushion if it takes it rather longer than expected to complete the Works. Where it is clear that the contractor has placed that kind of float in its programme, it is difficult to discern the difference in law from the situation where the contractor simply attempts to finish early. That situation has already been considered in Chapter 7, Section 7.1.

Essentially float is simply the space before or after individual activities when a group of activities is put together in the form of a programme. Whether it actually exists at all depends on the extent to which the programme mirrors reality.

<sup>27</sup> Nicholas J Carnell, *Causation and Delay in Construction Disputes* 2nd edition (2005) Blackwell Publishing pp 212–13.

<sup>28</sup> 17 May 1995, unreported.

<sup>29</sup> *Royal Brompton Hospital NHS Trust v Hammond & Others (No 8)* (2002) 88 Con LR 1 at 187 per Judge Lloyd.