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What Makes A Sound Quantum Analsyst?

Introduction
My objective in this article is to identify and describe what seem to me to be the qualities, skills, and methods of working of the sound quantum analyst.

By ''quantum analyst'' I mean the financial appraiser of construction claims. I do not mean the tribunal charged with deciding a construction dispute; the person I have in mind usually acts as a quantum expert. By ''construction claims'' I mean claims against under-performing professionals, defects claims, claims for components of the contract price, termination claims or, more frequently, delay and disruption claims. As someone who himself practises in this field, I declare an interest.

The single factor likely to be uppermost in the minds of those involved in the resolution of construction claims is the financial worth of those claims. The quality of the quantum analyst can therefore be of the first importance in their satisfactory resolution.

Let me immediately set out what I consider to be the core qualities required. The sound quantum analyst is well-informed yet inquisitive. He is creative, and motivated to trace a problem down to its essential components. He will search for gaps, hypothesise about missing material, and explore justifiable answers.

The role of the quantum analyst
This summary may be thought to conceal a potential tension between expertise in matters to do with quantum, and the discharge of the role of quantum expert.

In England, an expert witness (sometimes called a ''testifying expert'') is someone who has been instructed to prepare or give expert evidence for the purposes of contested proceedings. He owes an overriding duty to the tribunal, regardless of the interests of those from whom the expert has received his instructions, or by whom he is paid.1 His work should be independent, uninfluenced as to form or content by the
exigencies of litigation.2

An ''advising'' expert, by contrast, may be retained by a party for the purposes of giving advice to that party. Such an expert will be free to help in the development of a case; his instructions and advice given in the contemplation of legal proceedings will usually be privileged against disclosure.3

Whichever role he discharges, however, the expert should in my view always be objective and have a well-developed scepticism for the commitment of the protagonist, particularly one who advances his case in finite and inflexible terms. He should be cautious to the temptation, no doubt sometimes spurred by the desire for a ready answer, to furnish an unwarranted or unsatisfactorily rationalised evaluation.

The conceptual skills required of the sound quantum analyst

The evaluation of construction claims sits at the crossroads of a number of disciplines. It is perhaps understandable that those who do not have either the training or the experience in a variety of relevant fields will be nervous as analysts. Thus Bonbright, as long ago as 1937, said: ''Doubtless one of the reasons why legal valuation has not been studied synthetically is that the subject does not correspond to the specialty of any single profession or of any one person's career within that profession. The cautious expert fights shy of a problem that involves law, economics, accountancy, and commercial appraisal.''4

The primary disciplines likely to be invoked by the sound quantum analyst working in construction are law, economics, accountancy and the construction process, including its organisation and management.

Occasionally, the sound quantum analyst will consult the tenets of even more distant disciplines. This might extend to the work of the historian and philosopher (in relation, for example, to causation); the psychologist and welfare economist (in relation, for example, to attitude to and motivation for work); the time and motion analyst (in relation, for example, to resource outputs and efficiency).

A sound quantum analyst may therefore be multi-disciplinarian. If not, then he will be able to identify and call upon the relevant additional expertise or assistance when required, and properly assimilate and balance the information or advice received.

Given this specification of qualities, it might be thought that the sound quantum analyst is likely to be drawn from a limited pool of people working within a well-defined discipline, in a well-recognised (if not common) structure, pursuing an established practice and procedure, deploying a tight, well-developed and comprehensive set of principles through the use of standard tools and methodologies.

In fact, the pool turns out to be much larger. It is highly fragmented, being a mixture of people drawn from diverse backgrounds. There is great divergence in individual skills, and limited consensus between its practitioners, who often draw heavily on their subjective perceptions and particular competencies.

In addition, some areas of practice commonly verge on the insular. By way of example, the lay person usually associates the concept of a ''remedy'' with a process whereby a defaulting defendant is brought to account by overtly formal legal means. As part of this process, the claimant is usually seeking a remedy for the invasion by the defendant of an ''interest'' protected by the law. The sound quantum analyst should be in a position to identify the appropriate interest, be aware of the considerations involved in pursuing a particular interest rather than any alternative interests, and be able to evaluate it financially. Yet the construction claims evaluation literature notably fails, on anything other than a superficial and faltering basis, to recognise, categorise, discuss or seek to reflect the various interests addressed by the law of remedies or their proper evaluation.

This deficiency is to be noted also at the workface: few analysts reflect these various interests in their work. That remains the case notwithstanding, in the context of damages for breach of contract, the publication in the legal literature more than 70 years ago of a seminal (and still the leading) essay on the subject.5 Thus, the vast majority of quantum analysts would be mystified by references

to ''essential'' or ''incidental'' reliance, or the ''expectation'', ''restitution'' and ''indemnity''6 interests (which have differing objectives, may constitute alternatives and may have significant consequences on the burden of proof) which form the essence of that now classic formulation.

The detailed skills required of the sound quantum analyst

I will limit myself in this section to considerations of ''cost'', which are likely to occupy a substantial part of the work of the quantum analyst.

The proper allocation of cost may often be the key to establishing its recoverability as part of a construction claim. The question whether a particular cost is properly categorised as time-related, volume-related, ''once-only'', etc., is beyond the scope of this article. The essential point, however, is that the skills involved in determining the proper allocation of that cost are as much technical construction skills as they are a facility with the proper assembly, attribution and manipulation of the relevant figures.

The differing approach of the various disciplines to ''cost'' may also be a significant consideration. Thus, to the traditional accountant cost usually represents the historical outlay made to secure particular resources. This approach can expose significant difficulties, such as with long-lived assets, and assets contributing to more than one product. In construction claims, plant and overheads are prime examples of these sorts of assets. Some costs, on the other hand, such as the imputed interest on capital used in the business, may not be reflected at all by the traditional accountant. To the economist, the concept of cost tends to be used more as an aid to decisionmaking, indicating whether, for example, the resource under analysis is being put to its best use. The cost of a particular commodity is then the value that would have been attributed to that commodity in its next best alternative use, i.e., its ''opportunity cost''. The analyst should be aware of these differences and be prepared to articulate and justify his use of and/or preference between them.

Another important distinction is between fixed and variable costs. These are, again, primarily of interest to the economist, who usually seeks to distinguish between those costs that can be avoided in the short run (variable costs), and those costs that cannot be so avoided (fixed costs). This distinction can turn out to be of fundamental importance also to the quantum analyst and significantly affect his conclusions.7

Sufficient confidence in the claimant's costs may only be achieved by an analyst who has at his fingertips a thorough understanding of the costing system used by the claimant. This will usually involve consideration of comprehensive accounting data. This ranges across the various stages of the costing hierarchy, starting with the lowliest requisition sheet through to the global corporate and/or management accounts, sufficient to provide a full financial picture of the project in the context of the claimant's business as a whole. An analyst who fails to achieve this level of understanding may be falling short of what is reasonably to be expected of him in that role.8

Even an analyst armed with this raw data may find the task less than straightforward. A simple and commonplace complication may be the account coding allocated to a particular entry: costs may easily be miscoded. The reasons for this may range from blameless inadvertence to mischievous accountancy.

To illustrate more significant complications, assume that the task of the quantum analyst is to establish the expenditure incurred by the contractor over a particular period, being the expenditure

relevant to a delay claim, and that he has available to him the contractor's account ledgers. It would be normal, in seeking to establish the expenditure over the relevant period, to take the balance shown in the general (or particular) ledger at the end of the period and to take from it the balance as at the beginning of the same period. That, however, must be subjected to adjustments for a range of items. Two of particular interest would be:

- Provisions
- Post-event allocations

Provisions represent anticipated expenditure whose precise magnitude may not be known at the date the provision is made. They therefore act as temporary entries. As and when actual expenditure is made or identified, the provision is adjusted. Accordingly, one must take care to adjust provisions by actual expenditure. Where provisions are made against expenditure to be incurred in respect of a future obligation, it may be sensible to exclude it from the period in which the provision is made, and track it forward into the relevant period. It would thus become an ''omission'' from the ledger.

Post-event allocations occur when an expense is posted in the ledger at some date later than the commitment to which it relates. It will clearly be necessary to consider the period beyond that which is the focus of immediate interest to the analyst and to effect relevant corrections. Corrections may be by way of additions or omissions. Omissions are most likely to result from an analysis of the hinterland before the beginning of the period which is the focus of interest; additions are most likely to result from an analysis of the hinterland beyond the end date of the period which is the focus of interest.

Adjustments which do not make an obvious appearance in the accounting material before the quantum analyst may or may not fall within the period of focus in the analysis. Dealings with third parties often provide a fruitful source for such adjustments. A recurrent example is discounts that the contractor is able to secure against his liabilities to third parties. The unscrupulous contractor will not disclose such discounts.9 To the extent that it is relevant to any claim, it is important for the analyst to see the full extent of intermediate invoicing and the documents that constitute the settlement of accounts between the contractor and such third parties.

In fact, adjustments or accommodations made may go beyond not only the immediate time-frame of analysis but also beyond the project which is the focus of analysis. These pose some of the greatest challenges, simply because they are not to be seen, or readily to be discerned, from the data to which the quantum analyst is likely to be directed, or given access. These may include:

- Credits or rebates from third parties made after the event, without adjustments to earlier entries/documents being noted or shown.
- Turnover discounts, i.e., discounts which are relevant to the trading relations between organisations as a whole, relating to the totality of their business.
- Accommodations on other projects (whether extant or anticipated), such as arrangements for favoured pricing on those other projects.

Because it is impossible to be certain that the analyst has been provided with a complete and accurate picture, an effective supplement may be for the analyst who has otherwise done his best to secure a comprehensive understanding of these matters, to provoke production of an express

statement of truth. This should be from (either, but preferably both) a responsible officer of the claimant organisation/an independent auditor, and should verify that the accounting data made available identifies and quantifies all relevant matters. A formulation which I have devised, and used successfully, requires confirmation that, in relation to all sums claimed, the claimant has disclosed and taken into account in his claims evaluation: all relevant transactions, (positive and negative) accruals, provisions, discounts, credits, allowances, rebates, reversals, post-event allocations, accommodations, or other accounting arrangements, etc., whether in relation to the particular project under scrutiny, any other projects, or the broader dealings between the claimant and third parties.

The essential message is, therefore, that sufficient confidence in the claimant's costs may often be achieved only by an analyst who has at his disposal a thorough understanding of the accounting system used by the claimant, comprehensive accounting data, access to the various stages of the costing hierarchy, and a complete financial picture of the project in the context of the claimant's business as a whole.

Investigation of documents directly relevant to the work of the quantum analyst may provide important additional information, with consequences beyond the matters strictly relevant to the analyst's work. Whilst investigations into these areas must always be treated objectively and with some circumspection (and are probably best done under specific authorisation once a lead is identified), it is clear that this sort of material may come to the attention of only the quantum analyst (as nobody else is likely to be charged with considering it) and yet may be of much broader significance in the dispute resolution process. Thus, take the following example of material unearthed as part of the disclosure process: a contractor's quantity surveyor, appointed as its representative to make interim applications for payment and to settle the final account, knowingly places incomplete and incorrect financial information relating to the payments made to and settlements achieved with subcontractors before the employer's quantity surveyor, in order that it be acted upon, to the financial advantage of the contractor, whilst he had other, complete and correct, information in his possession which he did not place before the employer's quantity surveyor. The material can be shown to have been acted upon by the employer, as intended.

This sort of material may not only undermine the credibility of the individuals associated with its creation and dissemination, or the case as a whole, but also provide the employer with a remedy direct against the contractor (through the concept of vicarious responsibility10), and against the contractor's quantity surveyor, 11 as well as founding criminal proceedings.12

Another example, also drawn from the writer's experience, arose upon the routine inspection as part of the expert process of invoices submitted by one of the parties' legal representatives, the value of which was claimed in connection with an international arbitration. The detailed entries showed that there had been direct, and extended, telephone contact between those legal representatives (and, by way of conference calls, others) and a (then prospective and later actual) member of the arbitral tribunal prior to his appointment, leading to a subsequent challenge to the appointment of that tribunal member.

Is there an appropriate profession of quantum analysts?

Whilst disciplines other than the law have a substantial role to play, it is the law that provides the essential framework within which the quantum analyst carries out his work. The role of the courts has been to lay down guiding principles on measurement.13 Thus, regardless of the basic discipline

of the quantum analyst, a thorough grasp of the law of remedies, its requirements and boundaries is an essential prerequisite to his work. I will next consider an (inexhaustive) list of the professions which may be involved as quantum analysts.

Architects/engineers

It is rare, in the writer's experience, for architects or engineers to display any overt interest in quantum analysis. Whilst these practitioners would obviously be familiar with the construction process, they may lack sufficient expertise in the law, accountancy or economics.

Lawyers

Some commentators on quantification are lawyers, although few if any are actual practitioners in the field of quantum analysis. Although there is a stronger tradition of legal commentary in the US, to date there is only one notable example in the UK.14 Yet others combine the perspectives of the lawyer and the construction practitioner, but these are still relatively rare.

Some judges have shown a marked reluctance to deal, in any detail, with money matters.15 That this sort of approach is inadequate has been the subject of adverse commentary at the highest judicial level.16 Whilst at the present day judges appear to be more comfortable with the quantification role, it seems to this writer that few of them would be at ease with making a decision on quantum without the aid of some expert evidence.

Accountants

There has been a significant, albeit relatively recent, interest in the UK in the subject particularly by ''forensic'' accountants. Accountancy has tended to have a more profound influence upon US practice. The substantial drawbacks, if they exist in relation to particular analysts drawn from this discipline, are likely to relate to the lack of expertise in the law and the construction process and with ''value'' as opposed to ''cost'' driven appraisals, with which again accountants are likely to be unfamiliar.

Quantity surveyors

In the UK (and the Commonwealth) the quantum analyst has tended to be drawn from the ''quantity surveying'' profession. There is no statutory definition of the discipline or, unlike terms such as ''architect'' any protection of the term ''quantity surveyor''.17 It is somewhat of a mongrel profession traditionally difficult to define, which has adapted significantly to changing circumstances and the needs of the marketplace. The profession has tended to deploy a broad remit. For these reasons the term has traditionally been much overused.

The quantity surveyor is primarily concerned with the commercial aspects of construction contracts.18 Quantity surveying acts as both too broad and too narrow a definition of the quantum analyst at the present day. Thus, the traditional professional quantity surveyor may not be sufficiently familiar with:

- appropriate management principles;
- the contractors' approach to and methods of working;
- construction costs: it is a matter of surprise just how many ''professional'' quantity surveyors still know little if anything about the manner in which contractors reflect their costs in their tenders for work, or how their actual costs are incurred or recorded;
- the relevant law.

The sound quantum analyst's approach to evaluation

The sound quantum analyst will approach his work methodically, having regard to the points made above. He will (or should) have a mental list (it might even be written down, drawn from his own experience and what he has learned or distilled from others over his lifetime's experience) of key principles of evaluation.

I set out below, and briefly annotate, some of the items that I believe should appear on that list. Inevitably, some of these will at points overlap.

Correctly identify the claimant's cause of action

Lawyers now know that it is never sufficient to ask simply whether A owes B a duty of care. It is always necessary to determine the scope of the duty by reference to the kind of damage from which A must take care to save B harmless. The determination of the scope of the duty varies with the area of law involved. In the case of an implied contractual duty, the nature and extent of the liability is defined by the term which the law implies.19 The quantum analyst should work within the same parameters.

Give effect to causal requirements

Proof of causation is usually an essential ingredient to a finding of liability. Thus, it is usually incumbent upon the claimant to show not only the fact of damage but also that it is causally connected to the matter complained of, i.e., that it was due to or attributable to it.20

Expenditure may be expressed in causal language: where, for example, commitment to expenditure is made regardless of the parties' contract, it cannot be said to have been incurred by reason of the existence of the contract.21 Such expenditure is therefore unlikely to be recoverable in an action for reliance damages (which are designed to put the non-breaching party back in the position in which he would have been in had the contract not been made); by contrast it may be recoverable as expectation damages (which are designed to put the non-breaching party in the position he would have been in had the breaching party performed the contract).22 The search, at law, is usually for ''effective'' cause.

In construction disputes a complicating factor is often the question of concurrent causation. Whilst discussion of concurrent causation is beyond the scope of this article, as a general rule a contract breaker cannot excuse himself from performance by pointing to a concurrent cause of somebody else's making; it is enough that his breach of contract is ''an'' effective cause.23

Nor is it usually necessary in contract to evaluate competing causes and ascertain which of them is dominant.24 Whilst explicit discussion of causation in contract is, by contrast with tort, relatively rare it has been said that equivalent considerations apply.25

Notwithstanding all this, account should always be taken of any particular contractual rules on the resolution of causal issues. Thus, it may be that the contract requires the extension of time provisions (and any related delay analysis) to be operated in a particular way, e.g., prospectively. In the absence of a contractual requirement so to do, a dogmatic application of rules of thumb, such as the prospective approach, may well produce invalid answers.

What does seem clear is that where the alleged default is a breach of contract, it will usually be important, when considering causation, to specify with some precision the obligation which is said to

have been breached, e.g., the failure to complete the whole of the works by a specified date (or where defaults are specified against sections of work, by a particular list of dates). Again, this is often ignored, to the detriment of analysis.

Work within the remoteness requirements

It is well known that whilst an ordering of the facts and a resolution of the causal issues may suggest recovery for matters far removed from the immediate difficulty, the law will not allow recovery of all the consequences of a wrong.

Whilst a discussion of remoteness is beyond the scope of this article, it is of central importance that the analyst understand and work within the limitations imposed by the law, having regard in turn to the different considerations which apply to the area of law which founds the cause of action.

Take proper account of ''no loss'' arguments

A claimant may be unable to recover any damages because he can show no loss.26 The analyst should familiarise himself with the many exceptions to or glosses upon this rule, however, such as where the claimant receives some extrinsic or collateral advantage,27 or there is unavoidable betterment.28 In relation to betterment, the burden of proof lies with the defendant. It is not enough that an element of betterment can be identified. It has to be shown that the claimant had a choice, and that he would have been able to mitigate his loss at less cost.29

Where there is more than one measure of loss, select the most appropriate

There may be a number of different ways of measuring the damage. They may produce significantly different financial answers. Thus, by way of example, the loss to a building owner due to the incorporation of defective or non-compliant materials may be measured by the cost of correction or the diminution in value of the building.

Minscombe Properties Ltd v. Sir Alfred McAlpine & Sons Ltd 30 concerned the question whether the cost of reinstatement of land to its contracted-for condition should be recoverable as damages. It was decided that relevant factors, guided by the facts of each case (including in that particular case the tenacity of the claimant in seeking to develop the land and the prospects of securing planning permission, which influenced the likelihood of reinstatement being in fact effected) include both considerations that damages are compensatory and that any damages should be reasonable as between the claimant and the defendant. Having regard to such matters, the cost of reinstatement was allowed.

Recognise avoidable consequences and compensating advantages

It is often the case that whilst an obvious disadvantage is suffered by reason of a breach of contract, an advantage is also gained.31

Less immediate or obvious compensating advantages may also come into play. For example, construction work which was intended to be carried out during the summer months may be pushed into the winter months and following work, which was originally due to be carried out during the winter is now pushed even further back to the following summer when, for example, working hours are longer and efficiency greater.

The same principle may apply to the volume of work: thus if, by reason of a breach, less work than otherwise would have been the case is carried out during inclement weather because, for example, the pace of work is slowed down, that advantage should be weighed in the balance against damages otherwise resulting from the breach. Similarly, an improvement in efficiency may be generated because of fewer work people working in a given area than would otherwise be the case if no breach had occurred. The obvious solution is to balance loss against gain and to award any net loss as compensation.32

Achieve as certain a measure as the circumstances allow

A tribunal expects to have satisfactory evidence of damages, where it is, or might reasonably have been available.33 Thus, in ***Oak Tree Leisure Ltd v. R A Fisk & Associates and W Fearnley & Sons (Salford) Ltd,***34 claims were made by an employer against an architect and a contractor in respect of building works to create a restaurant and public bar. Both organisations were found liable. In respect of one item, loss of profit in the sum of £10,000, however, the employer led no evidence. HH Judge Gilliland, QC, at first instance held that the claim was nevertheless a reasonable estimate, concluding that it was not necessary for there to be evidence to establish the true value of the claim. The Court of Appeal held that this was the wrong approach. The mere fact that a claim was made had no evidential value whatever; the court must have some evidence. Loss of profits could not be inferred from a lack of challenge. It has, nevertheless, been said that: ''The fact that damages cannot be assessed with certainty does not relieve the wrongdoer of the necessity of paying damages.''35

The distinction appears to be between the case where liability has not been made out and the case where liability is clear but quantum cannot be precisely established. In the former, no remedy is given; in the latter, where clear quantum evidence does not exist, something less may do and a remedy nevertheless given.36

Make comparisons on a valid, equivalent, basis

Comparisons are often made in damages claims between what ought to, and what does, obtain.37 In order for such comparisons to be valid, they must be made on a basis of equivalence.38 Construction claims are no exception,39 although it is remarkable how often in practice this very simple principle is overlooked or ignored.

Recognise latitude of choice

Where a breach of contract is or may be involved, the express remedy granting provisions are sometimes coupled with a saving common law remedy provision.40 The claimant is entitled in such a case to pursue alternative claims, and there is no requirement to elect between them.41

Where the claimant is obliged to pursue an express remedy set out in the contract he may need to bring himself within some particular administrative provision required by that remedy. The relevant tribunal may insist on strict compliance in order to admit the remedy.42 This is perhaps hardly surprising, particularly in circumstances where an equivalent remedy does not exist under the general law. The analyst should therefore have regard to the particular remedy-granting provisions and the strictures they impose upon the claimant.

It may, by contrast (and exceptionally), be that the remedy at common law is superior to that available under an express remedy-granting clause. Thus, particular heads of damage may not be recoverable where the provision extends only to ''cost'' or ''expense'',43 but otherwise where ''loss'' is allowable.44

Take account of price considerations

Claims based upon price (as opposed to ''cost'') are many and varied, but they can broadly be split between those where original contract price is relied on-either to found a claim for a part of what is included within that price, or as a basis to determine the value of a remedy for a claim in excess of the original contract price-and those where the value of the price that it is sought to recover is unrelated to the original contract price.

For claims which rely on allowances said to have been made by the claimant in its original contract price, it would be odd if the quantum analyst did not seek to satisfy himself that an allowance was in fact made in that original pricing, that it was of the order claimed, and that the original contract price was adequate to sustain the claimed allowance. These are difficult, but important, prerequisites for which the alternative, of presumptions in favour of the claimant, are all too easily made, usually by oversight.

Examples of pricing considerations unrelated to the original contract price include quantum meruit claims where a routinely applied rule of evaluation puts the measure of recovery at cost plus a reasonable mark-up for profit.

Require adequate proof of loss of alternative opportunities

It may be that the claim is, or can only be, put on the basis that the defendant deprived the claimant of an opportunity which would otherwise have been available to the claimant to exploit his commercial assets or resources. In those circumstances it would be odd if the quantum analyst did not seek adequate evidence of that allegation. By ''adequate'' here is intended not only that the claimant adduce satisfactory evidence that an alternative opportunity was in fact lost, but that the magnitude of that opportunity coincides with the size of the claim made. This is, again, routinely overlooked by quantum analysts, particularly in relation to claims not overtly couched in loss of opportunity terms.

Recognise spare capacity and voluntary expenditure

The normal award for damages for breach of contract is designed to put the claimant into the position he would have been in, absent the defendant's breach of contract (the ''expectation'' interest, referenced above). Where the claimant, for some reason other than the defendant's breach, over-provides resources, such as where the resources reflected in the original pricing of the project have (or should have) spare capacity associated with them, the measure of such over-provision may be ignored for the purposes of evaluation.

Take the simple example of job-dedicated tools. Such tools are largely of the non-mechanical variety (e.g., screwdrivers, brushes, chisels, hammers). Although they may clearly have a physical life extending beyond the project to which they are dedicated, such resources are commonly priced and shown in the contractor's cost accounting as consumables. Where, by reason of an employer's

breach of contract, those tools are retained longer on the project, or exposed to greater use than anticipated but not replaced, they may generate no additional cost to the contractor and hence would not, without more, legitimately figure in a breach of contract claim for such costs: they have ''spare capacity'' associated with them.

An example of spare capacity in the cases is to be seen in ***McAlpine Humberoak Ltd v. McDermott International Ltd (No 1),***45 in which the claimants sought recovery of increased costs alleged to arise out of the execution of variations (Nos 73 and 75) to pallets that were part of the weather deck for a tension leg platform of an offshore oil structure. The claim related to the increased cost of a crane allegedly required to load the varied pallets on a barge. The defendant conceded that a crane larger than that allowed for by the claimants was required, but denied the claim, arguing that a crane of larger capacity would in any event have been required to handle the original work. The Court of Appeal accepted the defendant's argument.46 Alternatively, the claimant may have been obliged to provide additional resources as a result of a breach of contract for which payment may have already been made, e.g., the introduction of an additional job-dedicated project manager whose time is not wholly taken up and can also attend to the consequences of other defendant defaults.

Examples of spare capacity can appear at all areas within a project or organisation. In contracting organisations, it is most likely to arise with preliminaries, overheads, and plant resources. In addition, some expenditure may be undertaken at the risk of the claimant. Thus, whilst expenditure incurred in tendering for construction projects is almost always undertaken at the request of the defendant, it ordinarily falls into this category. In the absence of exceptional effort (which may justify a restitutionary remedial response47), such expenditure ordinarily falls into a category of voluntary effort by the claimant that may be recoverable only against a commission.48

Avoid duplication

The sound quantum analyst will always be alert to the prospect of duplication in claims. The potential for duplication is so wide-ranging that the analyst should be ready to meet it at all points of his analysis. He will continually have at the forefront of his thinking that damages are compensatory.

The duplication may be between the claim at hand and other claims advanced at the same time,49 with the original contract price or a component thereof; or with the wider business revenues of the claimant, etc.50 Experience shows that duplication between claims is more likely in particular areas than others: the sound quantum analyst will develop a sixth sense about such potential. A recurring example in contractors' claims is between variation accounts and prolongation or disruption claims.51 A further, everyday, example is the contractor who seeks damages from a range of subcontractors, recovery of which would lead to his achieving a windfall against his true loss.52

Conclusion

The primary disciplines drawn upon by the sound quantum analyst are likely to be law, economics, accountancy and the construction process, including its organisation and management.

The most satisfactory evaluations are likely to be those which have regard to and seek to balance a solution

from among the answers provided by these relevant disciplines. By contrast, an answer which achieves

satisfaction of only one, or less than the full complement of answers from the relevant disciplines, is likely

to prove less satisfactory or persuasive. In that event, the analyst should be in a position to make, and
justify, a rational choice between the disparate answers which result.
The sound quantum analyst will be familiar with this wide variety of relevant influences upon his work and
be able, persuasively, to accommodate and apply them.
Franco Mastrandrea LLB (Hons), MSc, PhD, FRICS, FCI Arb, Barrister Page | 14

References:

1 Part 35 of the Civil Procedure Rules addresses the work of such an expert in relation to court proceedings.

2 See the speech of Lord Wilberforce in *Whitehouse v. Jordan [1981] 1 All ER 267 (HL)*.

3 Where, however, the dominant purpose of the report of an expert is not to provide advice in relation to actual or pro
posed litigation, then it may not be protected by litigation privilege: see, for example, *London Fire and Emergency Planning*
Authority v. Halcrow Gilbert & Crow Ltd [2005] BLR 18.

4 James C Bonbright, The Valuation of Property (McGraw-Hill, 1937), Vol 1, p. 7. Cf. O W Holmes, ''The Path of the Law'', 10
Harv LR 457 (1897): ''For the rational study of the law the black-letter man may be the man of the present, but the man of
the future is the man of statistics and the master of economics.''

5 Fuller and Perdue, ''The Reliance Interest in Contract Damages'', 46 Yale LJ 52 and 373 (1936).

6 After A I Ogus, The Law of Damages (Butterworths, 1973), p. 354.

7 Thus, whether a specific cost is properly classified a fixed or variable cost may turn on the particular facts. In *Kutner Buick,*
Inc v. American Motors Corp, 868 F 2d 614 (1989), Gibbons CJ for the US Court of Appeals, Third Circuit, observed that if
a business facility conducts a single activity, all costs whether denominated fixed or variable should be taken into account
in determining the effect on net profit of the termination of that activity. Under those circumstances all costs would
eventually be variable, because at some point after all activity ceased all costs would cease.
Similarly, on the peculiar facts of *Alfred McAlpine Homes North Ltd v. Property and Land Contractors Ltd (1995) 76 BLR*
59, HH Judge Humphrey LLoyd, QC, observed, in relation to a claim for overheads: ''If, as the arbitrator found, PLC were to
be regarded as a single contract company, then the fixed overheads expenditure on a delayed contract would necessarily
have to be regarded as direct expense due to the progress of the works being materially affected by the delay in question.''

8 His ability to achieve such an understanding may, of course, be hindered by lack of information, which may itself be due
to a narrow view being taken by the tribunal charged with resolving the dispute of the relevance of that information and
hence refusal to require its disclosure; such circumscription is rarely justified. This underpins the importance of an under
standing of the interplay between the various disciplines involved in the dispute resolution process.

9 The manipulation possible through discounts has a long and pervasive history in commercial endeavours, including
construction. Thus, in *London School Board v. Northcroft, Son and Neighbour (1902)*
4 HBC 2: 147, A L Smith J, perhaps overstating his case, said: ''I know in every branch of business, from your menial servant,
from your outside servant, from your agent, and from everyone, that cankerworm of taking commission and discount
pervades the whole system of business from start to finish, and the result is the master is robbed, because, of course, the
master has to pay for it in the result.''
10 The relevant test is whether the act is so closely connected with what the employee is authorised to do that it can rightly
be regarded as a mode, albeit an improper one, of doing it: see, for example, the speech of Lord Nicholls in *Dubai*
Aluminium Co Ltd v. Salaam [2003] 2 AC 366.
11 The common law test for fraudulent representation is as authoritatively defined by Lord Herschell in *Derry v. Peek (1889)*
14 App Cas 337: ''First, in order to sustain an action of deceit, there must be proof of fraud and nothing short of that will
suffice. Secondly, fraud is proved when it is shown that a false representation has been made (i) knowingly, (ii) without
belief in its truth, or (iii) recklessly, careless whether it be true or false.''
12 See the Fraud Act 2006, which has relaxed the traditional requirements for proof of this crime, and focuses on the of
fender's behaviour rather than its outcome upon the victim. Thus, it is not necessary to prove either that the victim is
deceived, or that he has suffered loss; it is sufficient that there is a dishonest intention by the offender to cause or create
the risk of loss.
13 Thus, Lord Sumner in *Admiralty Commissioners v. SS Chekiang (The Chekiang) [1926] AC 637* said: ''Damages may be a
'jury question' that is a question of fact for the jury, if there is one, but they must be measured under a proper direction, as
to what the law requires.'' Cf. *Hadley v. Baxendale (1854) 9 Exch 341,* in which Alderson B, said: ''We think that there ought
to be a new trial in this case. But in so doing we deem it expedient and necessary to state explicitly the rule by which the
judge at the next trial ought, in our opinion, to direct the jury to be governed when they estimate the damages.''
14 I N Duncan Wallace, Construction Contracts: Principles and Policies in Contract and Tort (Sweet & Maxwell, 1986),
particularly Chap 8.
15 Thus, in *Bernard Sunley & Co Ltd v. Cunard White Star [1939] 2 KB 791* (varied on appeal at [1940] 1 KB 740 (CA)),
Hallett J said at first instance in relation to a claim for delay of a week in the delivery of an excavating machine needed for a
contract to level an aerodrome because the defendants had sent an unsuitable lorry: ''The next question, and the last

question, which arises in this long judgment is as to the figure at which I arrive taking that view, and, upon the whole, I
feel that the lump sum figure at which I ought to arrive is £250. That is a lump sum figure arrived at in consideration of all
the circumstances, and any attempts to analyse it by an analytical process will, I think, be doomed to failure.''

16 Thus, Lord Sumner in the tort case of *The Chekiang [1926] AC 637* said: '' . . . the time has come when your Lordships
may, without any sacrifice of dignity, devote some short time to the rules applicable to the measure of damages in collision
cases. After all, little as this question has engaged the attention of the Courts, parties take more interest in it than any
other issues in litigation, and they are not alone in thinking that it is one in which platitudes and rules of thumb are no
good.''

17 The following words taken from the Preface to the First Edition (1922) of the Standard Method of Measurement captures
the problem neatly: ''In the absence of any statutory qualification for surveyors practising in the United Kingdom, any
person, up to the present, has been at liberty to describe himself as a quantity surveyor, and the public have no guarantee
that he is 'qualified for that office'.'' Since then, little has changed, although the designation ''Chartered Quantity Surveyor''
is not available to anyone who is not a qualified member of the Royal Institution of Chartered Surveyors (RICS): see *RICS v.*
Shepheard [1947] EG 370.

18 Thus, the quantity surveyor is not ordinarily interested in the question of quality, whether of design or workmanship. The
position will, of course, be different where the quantity surveyor obliges himself expressly in regard to matters of quality:
see, for example, *George Fischer Holdings Ltd v. Multi Design Consultants Ltd, Davis Langdon & Everest (1998) 61 Con LR*
85.

19 See the speech of Lord Hoffmann *in Banque Bruxelles Lambert SA v. Eagle Star Insurance Co Ltd [1997] AC 191.*

20 See, for example, *Quinn v. Burch Bros [1966] 2 All ER 283 (CA)*, in which a defendant main contractor agreed, under a
subcontract with the plaintiff plasterer, to supply equipment reasonably necessary for the plaintiff's work. The defendant
failed to provide a step-ladder despite a request to do so from the plaintiff. The plaintiff thereafter found a folded trestle,
which he propped against a wall and used as if it were a ladder to allow him to reach the ceiling. While he was standing
on the trestle the foot of it slipped and he fell and broke his heel. He claimed that his injuries were the result of the
defendant's breach of contract. He failed: the breach did not cause the accident; it merely provided an opportunity for the

accident to happen. That is not to say that providing the occasion for harm will never found liability. Thus, in *Stansbie v.*
Troman [1948] 1 All ER 599 (CA) a decorator working alone in a house, in breach of an implied contractual duty to take
care, went out to buy wallpaper and left the front door unlocked, thereby affording an opportunity to a thief to enter the
house. The decorator was held liable for the resulting loss of valuable goods.
21 Thus, in the celebrated High Court of Australia decision *in McRae v. Commonwealth Disposals Commission (1951) ALR*
131, the defendants invited tenders for the purchase of an oil tanker lying on the ''Jourmaund Reef'' and said to contain oil.
The plaintiffs were the successful tenderers. They fitted out at great expense a recovery mission, only to find that there
was no tanker, indeed no reef, at the place described. The plaintiffs were entitled to recover damages for breach of
contract. Equipment purchases and reconditioning expenditures were denied as wasted expenditure, however, because
theywere, at least in part, committed to before the contract was secured.
22 See, for example, *Anglia Television Ltd v. Reed [1971] 3 All ER 690 (CA)*, in which the defendant, who agreed to take the
lead role in a television play had double-booked himself over the relevant period and, as a result, breached his contract
with the plaintiff. The plaintiff had expended much money in employing personnel prior to the conclusion of the contract,
which it was found the defendant must have known was of a type of expenditure that would have been incurred. In a claim
for that expenditure Lord Denning MR said: ''If the plaintiff claims the wasted expenditure, he is not limited to the
expenditure incurred after the contract was concluded. He can claim also the expenditure incurred ***before*** the contract,
provided that it was such as would reasonably be in the contemplation of the parties as likely to be wasted if the contract
was broken.'' (Emphasis in original.)
23 See, for example, *Heskell v. Continental Express Ltd [1950] 1 All ER 1033*.
24 See, for example, the judgment of Scott Baker LJ in *Holladay v. East Kent Hospitals NHS Trust [2003] EWCA Civ 1696.*
25 See, for example, *County Ltd v. Girozentrale Securities [1996] 3 All ER 834 (CA)*.
26 See, for example, *Alfred John Jones v. Stroud District Council (1986) 34 BLR 27 (CA)* in which Neill LJ, said: '' . . . as a
general principle a plaintiff who seeks to recover damages must prove that he has suffered a loss.''
In *Weatherburn v. Joplings [2002] EWCA Civ 631*, whilst valuers failed to mention the possibility of subsidence of the
properties which they appraised because they were built on an area underlain with gypsum, no loss was attributable to
that breach as there had been no diminution in value at the time they should have provided the correct information. Fur
ther, the temporary property blight attributable to the subsequent collapse of a swallow hole was an event which would

have occurred even if the correct information had been provided in the valuation report.
It has been held that a holding company cannot usually recover losses made by a subsidiary: *Richard Roberts Holdings Ltd*
v. Douglas Smith Stimson Partnership (1988) 46 BLR 50. But a personal investor may be able to recover a loss: see, for
example, *Esso Petroleum Co Ltd v. Mardon [1976] QB 801 (CA)*. Furthermore, a shareholder may be able to recover losses

separate and distinct from those of the company: *Lee v. Sheard [1956] 1 QB 192 (CA).*
27 Thus, in *Bristol & West Building Society v. Paul Christie & Nicholas Butcher [1996] EGCS 136* (CA) a building society made
a loan against the negligent advice of a valuer and substantial breaches of duty from a solicitor. Each was, in the judge's
view, equally responsible for the resulting loss of some £137,500. The Society had made a contract of insurance under
which it was entitled to be indemnified for part of the loss. Some £39,500 was paid to the Society under that policy. This
arrangement was held to create no interest for the valuer. Furthermore, the fact that the premiums of that policy were to
have been paid for by the borrower made no difference to that conclusion. While this principle has found ready application
in tort cases in the US, it appears to have met with significant resistance in breach of contract actions.
28 As a general rule, a claimant should derive no windfall from the breach, through betterment. Where the claimant has
little or no choice in the matter, however, English law has allowed the full cost for replacement: see, for example,
Hollebone v. Midhurst and Fernhust Builders Ltd [1968] 1 Lloyd's Rep 38 in which the plaintiff's country house was damaged
by fire due to the admitted negligence of the second defendant's workman in carrying out subcontract works. It was held
that the plaintiff was entitled to recover the cost of repair without deduction for betterment for the rafters and floors,
because the originals would have lasted out the life of the house.
29 See, the judgment of Cresswell J in *Kuwait Airways Corp v. Iraq Airways Co [2004] EWHC 2603 (Comm).*
30 (1986) 279 EG 759 (CA).
31 See, for example, *British Westinghouse Electric and Manufacturing Co Ltd v. Underground Electric Railways Co of*
London Ltd [1912] AC 673.
32 S*taniforth v. Lyall (1830) 131 ER 65*. This approach may require an evaluation of the trading position of the whole
organisation: see *Tate & Lyle Food and Distribution Ltd v. GLC [1982] 1 WLR 149* (unaffected by the appeals on liability,
ending at [1983] 2 AC 509). The result may be no net deterioration in the claimant's aggregate position, in which case: (1)
no damages at all may be recoverable for that head of claim: see, in the law of tort, *Hole & Son (Sayers Common) Ltd v.*

Harrisons of Thurnscoe Ltd (1973) 1 Lloyd's Rep. 345; or (2) only nominal damages may be appropriate: see, for example,
Erie County Natural Gas and Fuel Co Ltd v. Samuel S Carroll [1911] AC 105 (PC).
33 See, for example, Foaminol Laboratories Ltd v. British Artid Plastics [1941] 2 All ER 393 in which Hallett J, said, in
relation to a claim for loss of goodwill from editresses who had provided puff articles of a summer cream which the
defendants failed to deliver as agreed: ''All that is perfectly true, but all that seems to me to be very general, and,
although quite real, very vague . . . There are many cases in which the quantifying of the pecuniary loss is extremely
difficult and the judge has to do the best he can. Here, however . . . I have no material which enables me to put
any figure at all upon that pecuniary loss . . . ''
34 [1996] EWCA Civ 1041.
35 See the highly influential judgment of Vaughan Williams LJ *in Chaplin v. Hicks [1911] 2 KB 786 (CA). Cf. Story Parchment*
Co v. Paterson Parchment Co, 282 US 555 (1931), in which Mr Justice Sutherland in delivering the opinion of the
US Supreme Court said: ''The rule which precludes the recovery of uncertain damages applies to such as are not the
certain result of the wrong, not to those damages which are definitely attributable to the wrong and only uncertain in
respect of their amount.''
36 A useful illustration is thought to be *Johnson Control Systems Ltd v. Techni-Track Europa Ltd (2003) 86 Con LR 108*
(substantially confirmed at (2003) 91 Con LR 88 (CA)), in which two claims appear to have fallen either side of this line:
(1) The claim for loss of productivity, claimed as 75% of the difference between actual and recovered man-hours in respect
of which the learned judge said: ''I accept that that may be a valid starting point to value a delay and disruption claim
where causative delay and disruption is demonstrated. Mr Quigley [the sub-subcontractor's quantum expert] was unable
to establish the responsibility and reasons for the delays said to lead to disruptive or unproductive working . . . He [carried
out a sampling exercise] . . . An assessment of probabilities is a matter of evidence. The evidential basis for such a
conclusion has not been established . . . I reject Mr Quigley's speculative and theoretical approach to assessing
responsibility under the contract for the general delay complained of. It is arbitrary and ignores criticality.''
(2) The claim for work carried out but unpaid, in respect of which HH Judge David Wilcox, QC, said: ''Mr Ashworth [the
subcontractor's quantum expert] does not seriously attempt to value this work. He takes the view that [the subsubcontractor]
was unable to demonstrate by the required contractual means, the true value of any work which had been

undertaken and is not entitled to any payment. That is an unattractive argument in all the circumstances. The Court must
do its best on the evidence before it.''
Cf. Osterling v. Frick, 131 A 250 (1925), which involved an action by an architect for fees for work undertaken. The
architect had caused losses to the employer as a result of delays in the provision of information. The measure of that loss
was in issue. The Supreme Court of Pennsylvania upheld on appeal a credit of $40,000 (as proposed on behalf of the
architect) against the claimed fees on the ground that the amount of the credit was not based on mere guess or
speculation but could be fairly estimated from the evidence. Walling J speaking for the court noted: ''It has truly been said
that substantial justice is better than exact injustice.''

37 Lord Hoffmann in *Banque Bruxelles Lambert SA v. Eagle Star Insurance Co Ltd [1997] AC 191* said: ''The calculation of loss
must of course involve comparing what the plaintiff has lost as a result of making the loan with what his position would
have been if he had not made it. If for example the lender would have lost the same money on some other transaction,
then the valuer's negligence has caused him no loss. Likewise if he has substantially overvalued the property so that the
lender stands to make a loss if he has to sell the security at current values, but a rise in the property market enables him to
realise enough to pay off the whole loan, the lender has suffered no loss.''
38 For an example, in the general law, see *Longden v. British Coal Corp [1998] AC 653*, involving the assessment of dam
ages for personal injury, in which Lord Hope said: ''I think that it is clear that, in order to compare like with like, the plaintiff
should be required to set against his claim for the loss of the retirement pension an appropriate portion of the lump sum
which he received on his retirement on the ground of incapacity. This is for the same reason as that which explains why
the annual payments by way of the incapacity pension must be brought into account. These annual payments will be
received as income during the same period as that to which the claim for loss of pension relates. So it is right also to bring
into account that part of the lump sum which represents the commutation of a part of the annual payments which he
would otherwise have received as income during the same period.''
39 Other than where no process of review is available. Thus, such an error will in England be insufficient to upset an
adjudicator's decision: see *Bouygues UK Ltd v. Dahl-Jensen UK Ltd [2000] BLR 522 (CA)* in which the adjudicator in his
summary assessment of claim and counterclaim took a gross sum which included 5% retention and deducted from it the

sums that had been paid during the subcontract, which excluded retention. This could not be challenged, even though as
the learned judge at first instance recognised: '' . . . it was necessary to make sure that like was compared with like, and
particularly to ensure that the retention percentage was deducted from both figures.''
40 See, for example, cl. 26.6 of the JCT 1998 forms.
41 See, for example, *Fairclough Building Ltd v. Vale of Belvoir Superstore Ltd (1990) 56 BLR 74,* in which HH Judge Thayne
Forbes, QC, said: ''Clause 26.6 of the building contract makes it clear that the Contractor has the right to pursue both
claims in tandem to the extent that he can make good such claims. It is not inequitable to permit the Contractor to pursue
a claim for damages, should he fail to satisfy a claim under Clause 26.'' However, where the contractual terms are intended
to be exhaustive, it will be otherwise, see for example, *Turner Corp Ltd v. Austotel Pty Ltd (1994) 13 BCL 378*, in which it
was held that the contractual code removed the common law rights. Cole J noted: ''There is, in my view, no room for a
'wider common law right' in the Proprietor to treat non-compliance with the contractual obligation by the Builder as a
separate basis for claiming damages being the cost of having a third party rectify or complete defective or omitted works.
That is because the contract specifies and confers upon the Proprietor its rights flowing from such breach; that is the
parties have, by contract, agreed upon the consequences to each of the Proprietor and the Builder, both as to rights and
powers flowing from, and the consequences of, such breach.''
42 For examples, see: (1) in the context of termination provisions, *Muir Construction Ltd v. Hambly Ltd, 1990 SLT 830, Yates*
Building Co Ltd v. Pulleyn & Sons (York) Ltd (1975) 237 EG 183; (2) in relation to other provisions, *Strachan & Henshaw Ltd v.*
Stein Industrie (UK) Ltd and GEC Alsthom Ltd (1997) 87 BLR 52 (CA), in which an express exclusion denied an alternative
remedy at common law for any claim arising in connection with the contract.
43 See, for example, GC Works 1, Edition 3, at cl. 46. It was held in *Thiess Watkins White Constructions Ltd v. Commonwealth*
of Australia (1992) 14 BCL 61 that the term ''extra costs incurred'' did not extend to off-site overheads.
44 Thus, ''loss'' was held by Lord Drummond Young in *Robertson Group (Construction) Ltd v. Amey Miller [2005] BLR 491*
to be what: '' . . . a person does not have . . . that he had or would otherwise have had but for an event with legal
significance.'' In that case a letter of intent provided that should a formal contract fail to be entered into, then all ''direct
costs and directly incurred losses'' would be underwritten. The defenders contended that this restricted recovery to costs
directly attributable to the particular project, namely, the cost of labour, plant and materials used, but not costs attribut

able to the pursuers' enterprise as a whole, such as head office overheads and any element of profit on the contract.
Whilst the expression ''direct costs and directly incurred losses'' was not one used in any of the standard forms of building
contract, it nevertheless clearly bore some similarity to the well-known phrase ''direct loss and/or expense'' found in the
JCT forms of contract. It was held that the term extended to both overheads and profit, on the premise (considered by this
writer not to be entirely secure) that: ''the intention to make a profit lies at the heart of all, or nearly all, commercial
activity, and the law must recognise that elementary economic fact.'' Whilst this reasoning was not expressly adopted, the
result was confirmed in the appeal decision in the Inner House at [2005] Scot CS IH 89.
45 (1992) 58 BLR 1 (CA).
46 Lloyd LJ, said: ''In their original tender they had not taken proper account of the weight of the lifting beams, and the
margin of safety which Conoco required. The point is dealt with by Mr Roderick in a supplementary proof. Its conclusion
was that a smaller crane could not have lifted the pallets, as originally designed, with safety.''
47 See, for example, *William Lacey (Hounslow) Ltd v. Davis [1957] 2 All ER 712*.

48 See, for example, *Hodges v. Earl of Litchfield (1835) 1 Bing NC 492* in which Tindal CJ, said: ''The expenses preliminary
to the contract ought not to be allowed. The party enters into them for his own benefit at a time when it is uncertain
whether there will be any contract or not.'' *Cf. Brenner v. First Artists' Management Pty Ltd [1993] 2 VR 221*, in which Byrne
J said: ''In this category will fall cases where a tenderer carries out estimating or other work in response to an invitation to
tender for a contract. It is understood in such cases that, in general, the tenderer takes the risk that the tender will be
unsuccessful and that, as a consequence, the work will be unrewarded.''
49 See, in the context of personal injuries, *Fish v. Wilcox [1994] 5 Med LR 230 (CA)*, in which damages for loss of earnings as
well as compensation of services to be rendered by a mother to her child were not allowed.
50 Thus, there may be duplication between damages and the recoverable costs of an action/ arbitration: see, for example,
George Fischer Holdings Ltd v. Multi Design Consultants Ltd, Davis Langdon & Everest [1998] EWHC TCC 329 (involving the
design fees in establishing a remedial scheme, the decision holding that, as long as there was no duplication, a party was
not obliged to elect whether he would pursue those fees as damages or as costs).
51 See the potential for massive duplication of this sort in the award of the distinguished panel of Nigerian arbitrators in
IPCO (Nigeria) Ltd v. Nigerian National Petroleum Co [2005] 2 Lloyd's Rep 326.
52 See, for example, the District Court of Appeal of Florida decision in *P & C Thompson Bros Construction Co v. Rowe, 433 So*

2d 1388 (1983) refusing recovery by a contractor against a subcontractor of both a sum for liquidated damages in respect
of the contractor's liability to the employer (which, when aggregated with sums recovered from other subcontractors was
already in excess of the contractor's actual losses for delayed completion) and, separately, liquidated damages under the
subcontract for the contractor's own losses for delays; recovery of both would have represented a significant windfall.
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