Writing Engineering Specifications

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Many other quotations, illustrating both good and bad examples of specification writing, have been gathered from many sources during the author's involvement in the subject. If anyone recognizes a case where their work has been criticized, please understand that it is all in a good cause. The author is equally grateful to those who unwittingly provided the good examples.

Despite all the good advice I received and used, responsibility for what appears in these pages is mine.

Introduction

I wrote this book because I want to see the gap narrowed between the writers of specifications and the writers of contracts. The art of the lawyer and the art of the engineer become apparent in their disparity when disputes arise in engineering contracts. In this book we are concerned with the act of writing, not what to write. There is no guidance here on what to specify as a suitable roof for your house extension, but I hope that when you have found the technical data, you will be able to specify it more clearly.

I have addressed the reader as the 'specifier' not because I believe that any such person exists, but because if I had used any other form of address, I should have become embroiled in deciding whether he or she was an engineer, architect, consultant, builder, lawyer, technical writer or some other particular person; thus, to avoid having to decide, and to keep the book as *neutral* as possible, the reader is addressed as the 'specifier' throughout.

The first chapter is important for the specifier, but it is addressed to him/her impersonally because I do not expect that the specifier will play a major role in the actual mechanics of contract drafting. The remaining chapters are addressed to the specifier more directly.

Quotations at the beginning of each chapter are either from *Alice in Wonderland* or *Alice Through the Looking-Glass* by Lewis Carroll. He would have written excellent specifications!

Jeremy Haslam
Cambridge 1987

Contents

1

Specifications in context

'What is the use of a book,' thought Alice, 'without pictures or conversations?'

INTRODUCTION

This first chapter looks at the writing of the *specifier* (see p. xv) in its place as part of a commercial arrangement. It discusses contracts, contract and tender documents, pricing strategies and some industry standard forms of contract. To know how to write his specification, the specifier needs to know how a contract is made and, should anything go wrong (in the legal not the technical sense), how the law of contract provides for remedies and assistance. The details of how contracts are actually prepared and how these remedies are obtained are usually left to lawyers.

No specifier is expected to know more than the basic information set out in this chapter, but it *is* very basic and it is not intended as a substitute for a legal textbook. Should the specifier wish to go further, there are a number of student texts on contract law as well as books on law for engineers, architects, and so on. However, the specifier should not be afraid of dipping into a legal textbook if only for the reason that most are beautifully written and many provide entertaining historical examples. The law of contract is very old and largely governed by events occurring in the horse-and-cart era – both appear frequently!

CONTRACTS AND BARGAINS

A contract is a bargain, but not every bargain is a contract. Such a statement is a reliable guide to adopt when thinking of the background to the writing of any document that forms part of a bargain.

Over the centuries the development of the legal process – the general law – has recognized the need for people to make bargains and to seek the help of the state if the bargain is not honoured. However, in exchange for lending its support, the state as the ultimate enforcer of the bargain requires

particular conditions (both procedural and substantive) to be met. Procedural conditions are those required by the state when it receives a request from a subject to enforce a bargain, and can loosely be thought of as methods of application to the courts or arbitration, and how those tribunals will hear the request. The substantive conditions are those contained in the common law (i.e. judge-made law) and statute. In these days the substantive law, since it also governs procedure, is always dominant but this has not always been the case.

PROPERTIES OF A CONTRACT

Not every bargain is a contract. In order to qualify as a contract, the bargain must have particular qualities:

(1) an offer has been made;
(2) that offer has been accepted;
(3) there is an intention that the bargain be enforceable;
(4) the parties making the bargain are qualified to do so under the law.

In the simplest terms a bargain that exhibits the four qualities listed above is a contract and, as such, remains in existence until it has been performed or terminated.

The concept of offer and acceptance is based upon the legal notion of 'consideration' – the exchange of some benefit or burden for a corresponding benefit or burden, and often in the form of a promise. In the normal course of events one party promises to pay, provided that the other party does something, although equally valid is the promise to pay, provided the other party desists from doing something – a forbearance. The elements of a promise for a promise, or promise and forbearance in any combination, is valid consideration and makes a contract binding in law. To promise unilaterally to do something for any one party (or even the whole world) for no apparent reciprocal action cannot be the basis of a contract; similarly, to forbear from doing something does not make a contract. Should a party wish to make a unilateral promise, he does so under a deed which needs no consideration, but has to be 'signed, sealed and delivered' to the other party to whom the promise is made.

In addition to the existence of consideration is the question of its value – and that question is ignored by the law. Consideration need have no value, it merely has to exist. If a man wishes to let a house for the rent of a peppercorn a year, it makes a valid contract and consideration is said to have passed. If a building contractor enters into a contract to build something at a considerable loss to himself, he cannot claim that no contract exists because of the lack of value to himself (though he may have other rights in contract). The last point is of central importance in engineering contracts where there is no right to receive 'adequate' consideration (though

there is a legal remedy against unjust enrichment), therefore any payment benefit has to be set out and received through the contract itself.

To many people there may appear to be some missing quality in all of the above: that a contract must be signed and be in writing. There is no legal requirement that a contract (except one relating to the sale of land) needs to be in writing. In fact thousands of contracts are made every day on the Stock Exchange without any paper passing between the parties making them; the later 'contract note' is only evidence that a contract was made. And as an extension to that idea, a contract can be varied by the parties making the original contract in the same way that the original contract was made. Indeed many people have unwittingly made contracts by bargaining under the mistaken impression that, provided nothing is in writing, no contract exists. The point of written contracts will, hopefully, become clearer later in this book.

Returning to the four qualities, listed above, it is necessary to understand them all clearly to appreciate the process of turning a bargain into a contract. An offer must be made, and this is the easiest part. A person who offers to sell a car to another for £1000 has made an offer. The recipient of the offer can do one of five things: he can reject it; accept it; make a counter-offer; make an inquiry; or ignore it. In order that the outcome is clear in a legal sense, the response to the offer must be specific. The necessary clarity is exhibited in these replies:

(a) Not likely/I can't afford that/No! – these are clear rejections;
(b) OK/fine/here's the money/I'll give you a cheque/agreed – these are clear acceptances;
(c) I'll give you £950/will you take £500 plus my hi-fi set? – these are counter-offers;
(d) Can my dad see it first?/it's a bit pricey/will you take less?/what about part-exchange? – these are inquiries;
(e) I'll let you know/[no reply] – this is ignoring the offer.

Thus (a) and (b) are both final – the first cancels the offer, the second gives rise to a binding contract. Once an offer has been rejected, it is no longer open for acceptance by the person who rejected it.

The counter-offer in (c) is merely an offer by the person to whom the original offer was made; it serves to reverse the offer–acceptance process. The counter-offer is therefore likely to produce any one of the five responses, including a counter-offer. This is the true bargaining process and is very common in any commercial transaction. The problem is knowing when the process has come to an end and a contract has been made.

The responses in (d) is in the nature of an inquiry into the attitude of the person making the offer. Unlike the counter-offer, an inquiry does not destroy the original offer which is still open for acceptance when the

inquiries are concluded. Thus the making of inquiries is an uncertain process since the dividing line between an inquiry and a counter-offer is somewhat blurred.

To ignore an offer has no effect upon that offer, then, except that time (which may be a condition of the offer) is passing. The examples in (e) cannot be taken as acceptance or rejection. For the person to state in his offer that if he hears nothing, then he will assume that the offer is accepted is a futile gesture. The law does not recognize that a contract can be made by silence – except in rare cases where the offer and response is already the subject of a binding contract.

An offer can be withdrawn at any time before it has been accepted, but after acceptance, it cannot be withdrawn or modified. In order to be effective, the withdrawal of the offer must be communicated to the person to whom the offer was made. In some cases a notice of withdrawal forms part of the offer, for example: 'This offer is open for acceptance until noon on Monday, 4 August 1988', in which case no further notice is required. In addition, such an offer still can be withdrawn earlier or the period of acceptance lengthened simply by telling those to whom the offer was made.

DISCHARGE OF A CONTRACT

Once a bargain has been made, it must be performed by both parties in order that it can be considered as discharged. When both parties have carried out their respective obligations, neither can be required by the other to do anything else. Paradoxically the process of cancellation, if allowed for in the contract, can be taken as part of its performance; the exercising of the right to cancel is merely performing the contract. To understand what constitutes performance, it is necessary to look at the terms of the actual contract to see whether those terms have been performed.

LEGAL REMEDIES

If the obligations under a contract have not been discharged within either the time allowed or in the manner required, then one of the parties is likely to have been at fault, that is in breach of contract. In such a case the party who suffered has three remedies open to him/her under the general law:

(1) damages;
(2) performance;
(3) repudiation.

The first remedy is the most common – obtaining money to compensate for the loss suffered. The amount of damages can be provided for in the contract (liquidated damages), or not (unliquidated damages). The latter is usually referred to as 'damages'. Damages have to be related to the loss suffered to the extent that, if no loss is suffered no damages are payable, even though a breach may have occurred.

The second remedy of performance is rarely sought. Termed 'specific performance', it is a declaration by the courts or arbitrator that a party must perform its obligations or suffer a penalty imposed by the tribunal. Since it requires a degree of supervision by the tribunal (for which it is not usually equipped), it is not often granted, and damages are awarded instead. The tribunal has thereby taken the line that money is sufficient compensation.

Repudiation, the third remedy, is the unilateral act of one party in cancelling the whole contract as a result of the other's breach. Although recognized in law as a valid course of action, the instances in which it can be successfully used are rare, coupled with the fact that repudiation itself may bring an action for breach of contract by the party who suffers the repudiation.

CONTRACTUAL REMEDIES

In addition to the remedies of damages, performance and repudiation under the general law of contract, the contract itself may contain some (or all) of the remedies open to an aggrieved party. Liquidated damages is one such remedy and there are many others. In fact the parties may agree to any remedies they choose, provided that they are not penalties. Parties to a contract are not allowed to seek punishment, only compensation for a loss. The common remedies are liquidated damages, offers of substitutes, re-performance of the unsatisfactory action to correct it, and cancellation.

LIMITATION OF RIGHTS

Whether or not a party is able to have remedies under the contract and under the general law of contract depends on the actual terms. Unlike consumer contracts, contracts in the business world may limit the rights of the parties to the terms of the contract only. Consumers are a special class of contracting person who have statutory rights which cannot be taken away by contract. Another class of person who may not be limited by contractual rights is one who suffers physical injury or death as a result of the actions of the other party to a contract in the course of its performance.

WARRANTIES AND REMEDIES

The law provides remedies for those who have failed to receive what they were entitled to under the contract – common law rights. Additionally, there are remedies laid down in Acts of Parliament – statutory rights. But both rights in the general law and statutes are not, by their very nature, explicit. There is no right to receive a generator delivering 480 V to have an error range of $\pm 10\%$, but there is a right to receive the item contracted for. If the contract specifies a generator with those properties, then the right is contractual.

The right to receive what has been contracted for is limited in time. The law (at present) states that a party has a right to sue within six years of

when the fault was discovered or could reasonably have been discovered by the wronged party. While the law is somewhat fluid on the point, the trend is towards fixed liability periods.

Warranties and guarantees are contractual in nature and are intended to clarify the common law. How warranties (and guarantees, the words are synonymous) are intended to operate depends on which party is putting them forward. Typically warranties offered by contractors are limited in nature, especially with respect to time. Any warranty that leaves the client with no redress for faulty equipment after a time which was less than the six years after the discovery of the fault has had the effect of limiting the client's common law rights. Any warranty which is specific as to the nature of the allowable claim (in technical terms) has the same effect. For example,

> X's industrial thermometers are guaranteed to ±1 degC valid for two years. No liability will be accepted by X for any loss or damage caused by errors outside the limit. X shall only be liable for a replacement thermometer up to the end of the warranty period, and shall have no liability thereafter. This guarantee substitutes all other rights of the purchaser.

Such a guarantee is commonly offered in industry. Note that it is absolutely limited in time to less than six years; the purchaser has no legal right to claim for damages if the thermometer fails accurately to record the temperature even within the stated limits; the supplier is only liable for a replacement; and the purchaser cannot rely on his common law rights. Consider the effect when such a thermometer is bought by a business which stores germinating seedlings at a constant temperature, and the thermometer is inaccurate by ±5 degC. However, if the thermometer was purchased by Mr Consumer for use in his greenhouse, then he would be protected by statute, which although allowing for the time limitation provides that the item must be fit for its purpose (it must actually record the temperature); the supplier is liable for the cost of the replacement thermometer including installation, delivery and return of the defective items with parts and labour; and any clause restricting his common law rights is invalid, thereby leaving the way open for consequential damages.

Obviously the ordinary consumer is better off than the industrial client. This is intentional because it is recognized in law that consumers individually have limited bargaining power and therefore need statutory protection. Businesses, on the other hand, operate as equals in the bargaining process.

The specifier must, then, be aware of what he is doing if he intends to obtain a specific warranty on the performance of any item. The advantage of certainty in a specific warranty, that is in the ease of proving a breach of warranty, has to be set against the limitations that such a warranty will contain.