

SYNTACTIC AMBIGUITY

Paul Conway – 14 March 2002

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Criticism of legal drafting, and the difficulties of understanding poorly drafted documents, are commonplace. Mr Francis Bennion, in his paper, *Written Evidence to the Renton Committee*, quotes King Edward VI writing in 1550:- *'I would wish that ... the superfluous and tedious statutes were brought into one sum together, and made more plain and short, to the intent that men might better understand them; which thing shall most help to advance the health of the Commonwealth.'*¹ Samuel Pepys, in his diary entry for 25 April 1666, referred to the *'obscurity [of English law] through multitude of long statutes.'*² Mr Arthur Symonds, in a letter in 1838 to the Right Honourable Charles Poulett Thomson, (the President of the Board of Trade), wrote:- *'The defects of our Statute Law may be summarised up, in the looseness and ambiguity of its language - in the confusion resulting from want of arrangement - ...'*³ The House of Commons' committee which in 1838 suggested improvements in style in statutes acknowledged that:- *'The two most obvious defects in the composition of our laws, are, - 1st, the diffuseness, looseness, and ambiguity of the language; and 2nd ...'*⁴ In *Watson v. Lee*⁵ Chief Justice Barwick observed (in a different context) that:- *'No inconvenience in government administration can, in my opinion, be allowed to displace adherence to the principle that a citizen should not be bound by a law the terms of which he has no means of knowing.'*⁶

The call for 'plain language' is not recent. *Chaucer's Dreame* in the 16th century refers to a story *'which ye shalle here, ... in playne Englishe'*⁷. In Shakespeare's *Much Ado about Nothing* Benedick commented on Claudio:- *'he was wont to speak plain and to the purpose, like an honest man and a soldier, and now is he turn'd orthography; his words are a very fantastical banquet, just so many strange dishes.'*⁸ Justice Hill in *Commissioner of Taxation v. Cooling*⁹ described sections 160M(6) and (7) Income Tax Assessment Act 1936 (Cwlth) in these terms:- *'While both subsections present difficulties of construction, the former is drafted with such obscurity that even those used to interpreting the utterances of the Delphic oracle might falter in seeking to elicit a sensible meaning from its terms.'*¹⁰

Mr Dennis Murphy, QC, in his submission made on 4 September 1992 for the New South Wales Parliamentary Counsel's Office, and made to the House of Representatives Standing Committee on Legal and Constitutional Affairs into Commonwealth Legislative and Legal Drafting, submitted that

*'... all legislation should be reasonably capable of being understood by the ordinary person of ordinary intelligence and having ordinary education.'*¹¹

The more comprehensive expression 'clear and precise language'¹², or 'language which is both clear and precise', is preferable to 'plain English' and to 'plain language'. In its report delivered in November 1992 the Hansard Society Commission recommended that:- *'... draftsmen (sic) should always seek for clarity, simplicity and brevity in their drafting, but that certainty should be paramount.'*¹³ Justice Frankfurter had said in *United States v. Monia*¹⁴:- *'The notion that because the words of a statute are plain, its meaning is also plain, is merely pernicious oversimplification. ... A statute, like other living organisms, derives significance and substance from its environment, from which it cannot be severed without being mutilated.'*¹⁵ While simplicity, brevity and plain English are often by-products of clarity, a document in clear language is often longer than an obscure document¹⁶. *'To purge language of its natural fuzziness calls for a process, not of simplification, but of elaboration. Vocabulary and syntax become strained and convoluted, until there is achieved something which almost ceases to be language and is better described as linguistic formulation, ...'*¹⁷

Australian parliaments have commenced to mandate the use of plain language by users of legislation; and have attempted to legislate in a clearer and more precise manner. In New South Wales instances include section 60F(2) Fair Trading Act 1987 (NSW) (*'The [lay-by] statement must ... be clearly legible, readily understandable and written in the English language. ...'*); and section 179(1) Legal Profession Act 1987 (NSW) (*'A disclosure under this Division [in relation to a costs agreement] must be made in writing and be expressed in clear plain language'*). Section 16 Industrial Relations Act 1993 (Cwlth) requires the Commission to ensure that its decisions and determinations are *'expressed in plain English; and ... structured in a way that is as easy to understand as the subject matter allows.'* Local Government Act 1993 (NSW), Protection of the Environment Administration Act 1991 (NSW), and Social Security Act 1991 (Cwlth) are examples of the 'new' form of legible and 'user-friendly' legislation.

Because English is a word order language, the placement of words is important. Changing the word order changes the meaning. Compare:-

- (a) Keep the home fires burning;
- (b) Keep burning the home fires;
- (c) Keep fires burning the home;

- (d) Keep home the burning fires;
- (e) Fires keep the home burning; and
- (f) Fires keep burning the home.

The most disconcerting aspect of the 'plain language' movement is its failure to consider the structure of written language. *'In seeking to achieve clarity of expression, those who have no more to recommend than short sentences, simple words, and readability formulas are offering a cracker in circumstances where a full gourmet feast is gleaming in the chef's eye for those with the wit but to ask for the menu. To practise their craft competently, legal drafters must gain control of the relevant intellectual skills. One such skill is facility in using some of the elementary techniques and knowledge of modern logic to achieve structure that is clear.'*¹⁸ Until the significance of sentence structure is recognised, clear and precise drafting is fortuitous and not routine. Drafters must recognise the possibility of syntactic ambiguities occurring through inadvertence or incompetence (or both); and must avoid inadvertently including such ambiguities in text. Excepting semantic ambiguities inherent in language, mathematical precision *can* be achieved in legal drafting. Drafters with a comprehension of basic logic, and the ability to recognise (and avoid) unintended syntactic ambiguity, can construct lengthy sentences which are nevertheless clear and precise.

Syntactic ambiguity differs from semantic ambiguity. In *Moore v. Hubbard*¹⁹ both semantic and syntactic issues arose. Hubbard placed a placard on an electric-light post. Section 5(10) Police Offences Act, 1928 (Vic.) made it an offence to place a placard on 'any house or building or any wall fence lamp post or gate ...'. Justice Macfarlane declared that: *'This is a matter which is not free from doubt, but in my opinion the real question is whether the two words "lamp post" in the section are to be read as referring to two separate things, namely, a lamp and a post, or to one thing only, namely, a lamp-post.'*²⁰ The Judge concluded that 'lamp post' was *'to be read as one word, namely, "lamp-post"'*²¹, and hence the conviction was quashed.

Mr Stephen Kloepfer says of semantic ambiguity that *'a word's inherent multiplicities of meaning derive from lexicographical usage and exist independently of context.'*²² Semantic ambiguity is the type of uncertainty of meaning resulting from the use of a multiple-meaning word. This form of ambiguity was recognised in *Blood-Smyth v. Carter*²³ when the Full Court of the Supreme Court of New South Wales jointly stated: *'... we think that, when a word commonly used in popular speech, whose legal connotation varies greatly according to the context and circumstances, is found in many different contexts in a patchwork statute such as the Landlord and Tenant (Amendment) Act, any*

*attempt to give it the same meaning wherever it occurs may well lead to error.*²⁴ Similarly the House of Lords has accepted that context can determine meaning²⁵.

Courts accept that language is imperfect, and regularly struggle with the determination of the meaning of words. In *Towne v. Eisner*²⁶ Justice Holmes delivered the judgment of the Supreme Court of the United States that 'income' in an income tax law did not necessarily have the same meaning when used in the Constitution. His Honour whimsically said:- *'A word is not a crystal, transparent and unchanged; it is the skin of a living thought and may vary greatly in colour and content according to the circumstances and the time in which it is used.'*²⁷ Quite curious consequences follow from the attempts of the Courts to resolve semantic ambiguities. Mr Zechariah Chafee Jnr. gives an extreme example of misinterpretation of a multiple-meaning word²⁸. A Massachusetts doctor charged with procuring an abortion failed to convince the Supreme Judicial Court of Massachusetts that he was protected by the Statute of Frauds. The doctor argued that no one should be held liable for the debt, default, or *miscarriage of another* unless evidenced by some memorandum in writing²⁹. The potential plurality of the meaning of individual words is readily acknowledged. Lord Reid in the House of Lords has said:- *'A provision is not ambiguous merely because it contains a word which in different contexts is capable of different meanings ... A provision is, in my judgment, ambiguous only if it contains a word or phrase which in that particular context is capable of having more than one meaning.'*³⁰

The more prevalent (and usually less noticeable) kind of ambiguity is ***syntactic ambiguity***. The logical import of a statement is often determined by the close interaction of the words and the syntax; syntactic ambiguity can easily produce ambiguity of meaning for the entire sentence. Syntactic ambiguity arises not from the range of meanings of single words, but from the location of the words in sentences (and often from the interpretation of the structural words expressing relationships between the semantic words³¹). It is the sentence structure which makes the text equivocal: not the multiplicity of the meanings attributed to the words. The meaning of a sentence is derived from the conjunction of the words in the sentence; but doubts may arise as to the relationship between different words in a sentence³². Professor Layman E. Allen³³ has elegantly distinguished semantic ambiguity and syntactic ambiguity as being the distinction between:-

- (a) how the intended meaning of a statement is affected by the intended *meaning of the individual words* used in that statement; and

- (b) how the intended meaning of the statement is affected by the *relationship intended between the individual words used*³⁴.

In written material 'ambiguity' is narrower than 'uncertainty'. 'Uncertainty' represents anything written in a sentence which allows that sentence to be interpreted in more than one sense.

'Vagueness' is semantic ambiguity in the boundaries of reference of words. The one word often connotes a large number of differing concepts: does 'penalty' include each of (a) 'fine', (b) 'forfeiture' and (c) 'imprisonment'³⁵? The range of possible classes of 'penalty' may be unlimited. *'[A]mbiguity ... is not to be equated with difficulty of construction, even difficulty to a point where judicial opinion as to meaning has differed*³⁶.'

'Ambiguity' is uncertainty among specific alternatives. A word in context can mean more than the isolated word; and can also mean less than the isolated word - more, because in context the word acquires new context and, at the same time, less, because the word is delimited by that context³⁷.

Although the words of a document are normally to be construed in their ordinary and natural meaning³⁸, the words should be construed in their context as part of the document as a whole, rather than in either their strict etymological sense or their popular meaning apart from that context³⁹. The maxim 'noscitur a sociis'⁴⁰ expresses the notion that a word may be construed by reference to the phrase in which it occurs⁴¹.

In *R v. Casement*⁴² Sir Roger Casement was charged with high treason contrary to Treason Act, 1351 (Eng.)⁴³. It was alleged that during World War I he incited British subjects who were prisoners of war in Germany to renounce their allegiance to the King. The statute declared that treason was committed '*... if a man do levy war against our Lord the King in his realm, or be adherent to the King's enemies in his realm, giving to them aid and comfort in the realm, or elsewhere, and thereof be properly attainted of open deed by the people of their condition: ...*'. The charge alleged adhering to the King's enemies elsewhere than in the King's realm, namely in the empire of Germany. The defence unsuccessfully submitted that the Crown had failed to prove an offence in law. *'The contention is that those words "or elsewhere" govern only the words "aid and comfort in the realm" and have no application to the words "be adherent to the King's enemies in his realm."*⁴⁴' The competing interpretations were:-

1. [treason was committed ...] if a man ...
 - (a) be adherent to the King's enemies in his realm

- (b) giving to them aid and comfort in the realm, or elsewhere, ...
2. [treason was committed ...] if a man ...
- (a) be adherent to the King's enemies in his realm,
 - (b) giving to them aid and comfort in the realm,
or elsewhere, ...

The King's Bench Division, and on appeal the Court of Criminal Appeal, whilst acknowledging the careful, well reasoned and able arguments of the defence, found the offence proved. The Chief Justice, Lord Reading, at first instance said:- *'... in my judgment the words "giving to them aid and comfort" may be read as a parenthesis; yet I do not confine the application of the words "or elsewhere" to that parenthesis; I think they apply just as much to the parenthesis as to the words which precede it. My view is ... that the words "or elsewhere" govern both limbs of the sentence - both the adhering to the King's enemies and the aid and comfort to the King's enemies - and that it is an offence to adhere within the realm or without the realm to the King's enemies, and it is equally an offence to adhere within the realm to the King's enemies by giving them aid and comfort without the realm.'*⁴⁵ On appeal to the Court of Criminal Appeal, the unanimous Court dismissed the prisoner's appeal saying:- *'We think that the meaning of these words in this: "giving aid and comfort to the King's enemies" are words in apposition; they are words to explain what is meant by being adherent to, and we think that if a man be adherent to the King's enemies in his realm by giving to them aid or comfort in his realm, or if he be adherent to the King's enemies elsewhere, that is by giving them aid or comfort elsewhere, he is equally adherent to the King's enemies; and if he is adherent to the King's enemies, then he commits the treason which the statute of Edward III defines.'*⁴⁶ In *Town Investments Limited v. Department of the Environment*⁴⁷ Lord Diplock commented that:- *'My Lords, it has been said that Roger Casement was hanged by a comma ...'*⁴⁸.

In *Bourne (Inspector of Taxes) v. Norwich Crematorium Ltd*⁴⁹ the taxpayer had claimed an income taxation deduction for expenditure in the construction of a crematorium's furnace chamber and chimney tower. Income Tax Act, 1952 (Eng.) allowed a deduction if the building was in use *'for the purpose of a trade which consists in the ... subjection of goods or materials to any process.'* Disallowing the claim on the ground that the consumption by fire of the dead body of a human being was not the subjection of goods or material to any process (and this despite 'goods and materials', 'subjection' and 'process' being words of the widest import), Justice Stamp said:- *'English words derive colour from those which surround them. Sentences are not mere collections of words to be*

*taken out of the sentence, defined separately by reference to the dictionary or decided cases, and then put back again into the sentence with the meaning which you have assigned to them as separate words, so as to give the sentence or phrase a meaning which as a sentence or phrase it cannot bear without distortion of the English language.*⁵⁰

Even the Constitution of United States of America contains syntactic ambiguities. Consider the following examples:-

Art. 1, '3, cl. 3

No Person shall be a Senator who shall not have attained to the Age of thirty years, and been nine Years a Citizen of the United States, and who shall not, when elected, be an Inhabitant of that State for which he (sic) shall be chosen.

Is the second 'and' to be read conjunctively or disjunctively? If the proper construction is that 'and' is conjunctive, then a person must fulfil all three qualifications⁵¹ before being allowed to sit in the Senate. If the proper construction is disjunctive⁵², then a nine year old Tibetan who has been in the United States for five days can be a senator, so long as the person is an inhabitant of that liberal State from which the person was elected⁵³. There is nothing in the text⁵⁴ which excludes such an interpretation. The peculiar interpretation can be avoided simply by reformatting the text into paragraphs, and taking care to specify that the candidate must satisfy each of the three conditions.

Art. 1, '8, cl. 1

The Congress shall have Power to lay and collect Taxes, Duties, Imposts and Excises, to pay the Debts and provide for the common Defence and general Welfare of the United States; but all Duties, Imposts and Excises shall be uniform throughout the United States.

The problem is whether the 'common defence and general welfare' clause:-

- (a) is a grant to Congress of a general unrestricted power to legislate for the common defence and general welfare of the United States [that is, unrelated to laws which also deal with taxes, duties, impost and excises]; or

- (b) simply limits the purposes for which Congress can tax [that is, the laws must also deal with taxes, duties, imposts and excises]⁵⁵.

The Supreme Court of the United States accepted alternative (b)⁵⁶. However the independent power construction is equally compelling.

Courts rarely recognise syntactic ambiguities. Invariably the judicial response is to interpret a clause in a particular way - and without compelling argument. The arbitrary preference of one interpretation over another has no justification - and invariably generates criticism. The United States Supreme Court's interpretation in *Calbeck v. Travelers Insurance Co.*⁵⁷ of section 3(a) Longshoremen's and Harbor Workers' Compensation Act 1927 (USA) provoked vigorous opposition. The statute provided:-

- (a) *Compensation shall be payable under this chapter in respect of disability or death of an employee, but only if the disability or death results from an injury occurring upon the navigable waters of the United States (including any dry dock) and if recovery for the disability or death through workmen's compensation proceedings may not validly be provided by State law.*

The United States Supreme Court, by a majority, interpreted the provision as authorising the payment of federal compensation to two maritime workers where state compensation was also available. The opposition of the two dissenting justices was particularly damning. '*... The Court concludes that Congress did not really mean what it said. I cannot join in this exercise in judicial legerdemain. I think the statute still means what it says, and what it has always been thought to mean - namely, that there can be no recovery under the Act in cases where the State may constitutionally confer a workmen's compensation remedy. While the result reached today may be a desirable one it is simply not what the law provides.*⁵⁸'

By using the following abbreviations the statutory provision can be reduced to '*compensation*, but only if *navigable* and if *not recovery*'.

- compensation* 'compensation shall be payable under this chapter in respect of disability or death of an employee';
navigable 'the disability or death results from an injury occurring upon the navigable

waters of the United States (including any dry dock)'; and
not recovery 'recovery for the disability or death through workmen's compensation proceedings may not validly be provided by State law.'⁵⁹

The competing syntactical constructions are:-

- A1 *compensation*, but only if [*navigable* and if *not recovery*]; and
 B1 [*compensation*, but only if *navigable*] and [*compensation* if *not recovery*].

Construction A1 is logically equivalent to:-

A2 if *navigable* and if *not recovery*, then *compensation*
 which is logically equivalent to:-

- A3 if [*navigable* and *not recovery*], then *compensation*.

Construction B1 is logically equivalent to:-

B2 [if *navigable*, then *compensation*] and [if *not recovery* then *compensation*]
 which is logically equivalent to:-

- B3 if [*navigable* and *not recovery*], then *compensation*.

From construction B2 one can deduce⁶⁰ each of:-

- B4 if *navigable*, then *compensation*; and
 B5 if *not recovery*, then *compensation*.

To justify compensation under construction A1 there are two necessary requirements:- both (i) *navigable* and (ii) *not recovery*. If either component is absent, then compensation is not payable. To justify compensation under construction B1 there is only one necessary requirement:- either (i) *navigable* or (ii) *not recovery*⁶¹. The United States Supreme Court chose construction B1:- '*Our conclusion is that Congress invoked its constitutional power so as to provide compensation for all injuries sustained on navigable waters whether or not a particular injury might also have been within the constitutional reach of a State workmen's compensation law.*'⁶²

The conditional statement, 'IF⁶³ *a*, THEN *b*', is more often than not really a disguised bi-conditional statement, 'IF AND ONLY IF *a*, THEN *b*'. The legislature specifies the exclusive antecedent

conditions entitling compensation: in other words, 'IF *a*, THEN *b*'; AND IF *NOT-a*, THEN *NOT-b*'. This is another way of saying 'IF *a*, THEN *b*', BUT OTHERWISE, NOT'. If the antecedent condition [*a*] is not satisfied, then the conclusion [*b*] is not the case.

Professor Layman E. Allen has developed a methodology to reveal the logical character of syntactically ambiguous propositions⁶⁴. Professor Allen devised a procedure which he maintains will help in the systematic detection of unintended syntactic ambiguity. As further developed, Professor Allen states that his technique will encourage more accurate and understandable legal drafting⁶⁵. In *Logic, Law and Dreams*⁶⁶ Professor Allen submits that:- *'It is a partial interpretation only because it is concerned merely with ascertaining the logical relationship between the constituent elements of the entire rule and not concerned with ascertaining the range of meaning of the individual constituents. Another way of characterizing this, perhaps, is to describe it as being concerned with syntactical interpretation ..., but not concerned with semantic interpretation.'*⁶⁷ Professor Allen regards his system of normalized (sic)⁶⁸ drafting as the natural progression from his arrow diagrams (or picture diagrams⁶⁹), and as the solution to the evils of inadvertent ambiguous drafting.

Horizontal form diagrams illustrate the natural-language statements in a simplistic methodology. Inevitably this highlights the structural ambiguities in the natural-language statements. Horizontal form diagrams can:-

- (a) contain abbreviations (such as letters) to replace relevant parts of the natural-language statements, the abbreviations being joined by straight lines representing the language connectors; OR
- (b) contain within rectangular boxes the text of the natural-language statements, the boxes being joined by straight lines representing the language connectors.

Professor Allen's systematically organised methodology for transforming natural-language statements into a more understandable (and less syntactically ambiguous) form highlights the logical relationships between the constituent elements of natural-language statements. There are five principal steps:-

- (a) separate the natural-language statements into their constituent elements;
- (b) determine whether:-
 - (i) conditional statements; OR

- (ii) bi-conditional statements
are more likely to have been intended by the natural-language statements;
- (c) determine which parts of the constituent elements of the natural-language statements represent :-
 - (i) the conditions of the natural-language statements; AND
 - (ii) the consequences of the natural-language statements;
- (d) re-arrange the constituent elements into the form of
 - (i) conditional statements; OR
 - (ii) bi-conditional statements; AND
- (e) rewrite the natural-language statements:-
 - (i) in a horizontal form diagram; AND
 - (ii) then in an arrow diagram; AND
 - (iii) then, using the arrow diagram for assistance, in clear normalized form.

The clear normalized form must express the same set of ideas (with minimum wording change, but not necessarily using the same set of words) as the natural-language statements. The logical connectors ‘AND’, ‘OR’, ‘IF ... THEN’, ‘IF, AND ONLY IF’ and ‘NOT’ join parts of the natural-language statements⁷⁰.

Professor Allen summarises the perceived advantages of clear normalized forms of statutes as follows:-

If statutes were drafted in normalized form, legislators considering their adoption would be able more knowledgeably to select at the time of enactment the particular syntactic interpretation that expressed their intention. Normalization gives legislators a precise tool to state legal norms by unambiguously relating conditions to desired results. Yet, any desired flexibility can still be achieved by incorporating uncertainty into the semantic content of sentences through the individual words and phrases chosen. ...

*Another advantage of normalized statutes is that such statutes are easier to comprehend and use than their traditional prose counterparts. ...*⁷¹

1. Illustrations 1-3 are horizontal form diagrammatic representations of natural-language statements. Portions of the statements are presented in boxes, which are connected by lines to highlight the

connectors 'and' and 'or'. Alternative available versions of the natural-language statements are presented.

- Illustration 4 is an arrow diagram representation of natural-language statements. The methodology largely mirrors that in 1. However the text is presented either in a conditional format, or in a bi-conditional format.

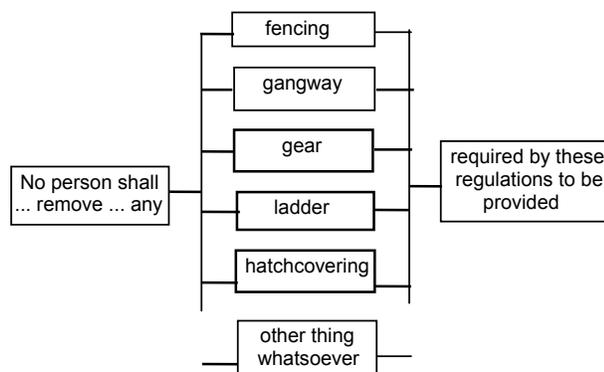
1. **COCKERILL v. WILLIAM CORY & SON LIMITED** ⁷²

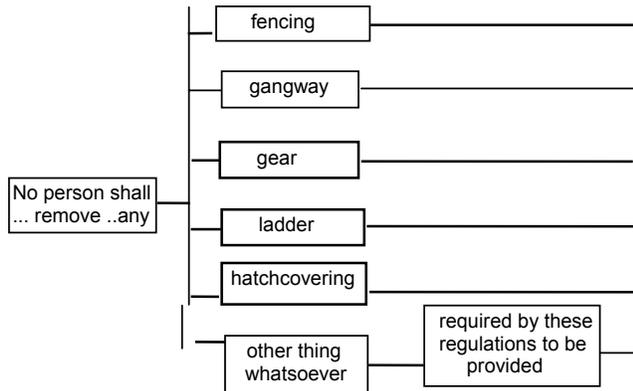
Regulation 45 of Docks Regulations, 1934 (Eng.) provides as follows:-

No person shall ... remove ... any fencing, gangway, gear, ladder, hatchcovering ... or other thing whatsoever required by these regulations to be provided. If removed, such things shall be restored at the end of the period during which their removal was necessary ...

The plaintiff's husband died when he fell through an open hatchway on the defendant's steamship. The incident allegedly resulted from a breach of regulation 45, the hatch cover not having been restored after the completion of loading. *'On a consideration of reg. 45, the question arises whether the words "required by these regulations to be provided" govern all that had gone before or whether they govern only the words "other thing whatsoever". It is argued on behalf of the plaintiff that the latter is the correct construction. On that basis it is said that in the present case hatch coverings were removed, and it is said that in breach of the requirement in the second sentence of reg. 45, the hatch covers were not restored. It is said, therefore, that the defendants were in breach of the regulation.'*⁷³

INTERPRETATION 1



INTERPRETATION 2

At first instance Justice McNair gave judgment for the defendants, and held *'that only the words "other things whatsoever" are qualified by the succeeding words "required by these regulations to be provided"⁷⁴, and the previously enumerated items of equipment - fencing, gangway, gear, and so forth - are left completely unqualified.'* Justice McNair had based himself largely on the dictum of Lord du Parc in *Grant v. Sun Shipping Co. Limited*⁷⁵. In *Grant v. Sun Shipping Co. Limited* a stevedore was injured when he fell into a ship's hold, as hatch coverings had been temporarily removed but not replaced. The House of Lords found for the worker, predominantly because there was a breach of regulation 37. However in relation to regulation 45, Lord du Parc said:- *'The question was raised in argument whether the words "required by these regulations to be provided" in reg. 45, were to be read as qualifying only the words "other things whatsoever"⁷⁶ or as qualifying all the preceding substantives⁷⁷ ... I have no doubt that the former construction is correct. No other seems to me to be possible with due regard to the context.'* Lord Uthwatt agreed with the reasoning and conclusions of Lord du Parc⁷⁸.

The Court of Appeal in *Cockerill v. William Cory & Son Limited*⁷⁹ unanimously accepted interpretation 1, and rejected the obiter conclusion of Lord de Parc. Lord Justice Willmer said:- *'But for the contrary view expressed by Lord du Parc I should, without hesitation, have said that that was the plain and ordinary meaning of the words used. I should have thought that the phrase "other things" in the first sentence was to be construed as ejusdem generis⁸⁰ with the specifically enumerated items previously referred to, the genus being those things which are "required by these regulations to be provided." That this view is correct I should have thought, reinforced by the use of the words "such things" in the second sentence.⁸¹* The Judge then concluded:- *'... I prefer to construe regulation 45 in accordance with what I conceive to be the ordinary and natural meaning of the words used, and to hold that the words "required by these regulations to be provided" are related to*

and qualify all the items of equipment previously enumerated.⁸²

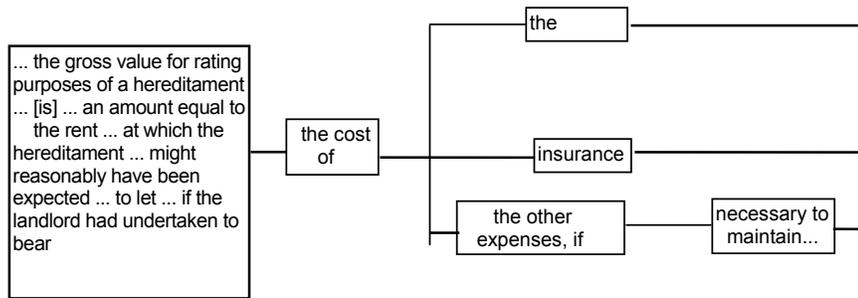
2. **WEXLER v. PLAYLE** ⁸³

Section 2 Valuation for Rating Act, 1953 (Eng.) provides as follows:-

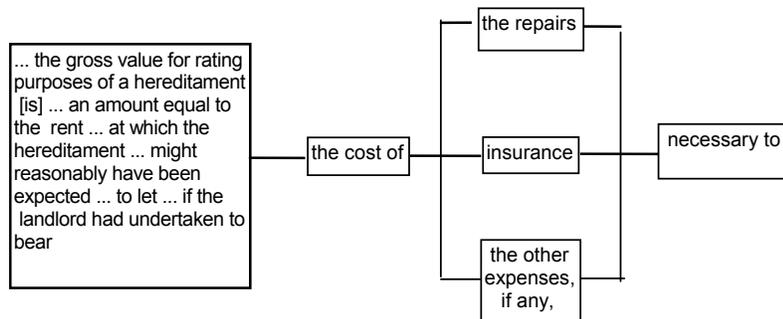
... the gross value for rating purposes of a hereditament ... [is] ... an amount equal to the rent ... at which the hereditament ... might reasonably have been expected ... to let ... if the landlord had undertaken to bear the cost of the repairs and insurance, and the other expenses, if any, necessary to maintain the hereditament in a state to command that rent.

There are two competing constructions:-

INTERPRETATION 1



INTERPRETATION 2



Though unnecessary to decide in the case, Lord Justice Morris preferred interpretation 2⁸⁴, whilst Lord Justices Willmer and Harman preferred the first construction⁸⁵. Lord Justice Morris recognised the syntactic ambiguity. *'Are we to read the concluding words as governing "cost of the repairs and*

*insurance" or are we to read them as governing "the other expenses, if any, necessary to maintain the hereditament in a state to command that rent?" ... That seems to lend some support to the view that the concluding words of subsection (2) are words that relate to "the other expenses, if any, necessary" to maintain the hereditament in a state to command that rent.*⁸⁶ Lord Justice Willmer (with whom Lord Justice Harman agreed) said:- '*... I should have thought that the more natural construction to put upon it is that the concluding words ... are to be taken as governing only "the other expenses" which immediately precede them.*'⁸⁷

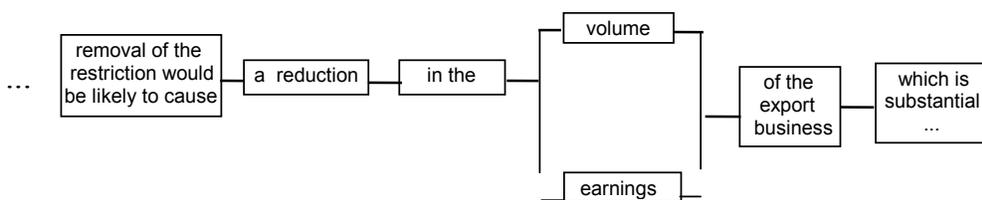
3. RE WATER-TUBE BOILERMAKERS' ASSOCIATION'S AGREEMENT⁸⁸

Section 21(1) Restrictive Trade Practices Act, 1956 (Eng.) provides as follows:-

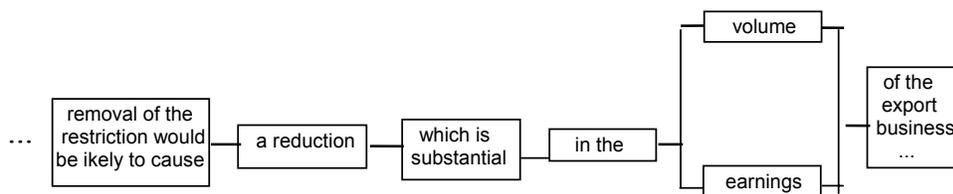
... a restriction ... shall be deemed to be contrary to the public interest unless the court is satisfied ... (f) that ... the removal of the restriction would be likely to cause a reduction in the volume or earnings of the export business which is substantial either in relation to the whole export business of the United Kingdom or in relation to the whole business (including export business) of the said trade or industry

There are three possible constructions of the relevant portion of the statute - but only the first two were considered by the Court.

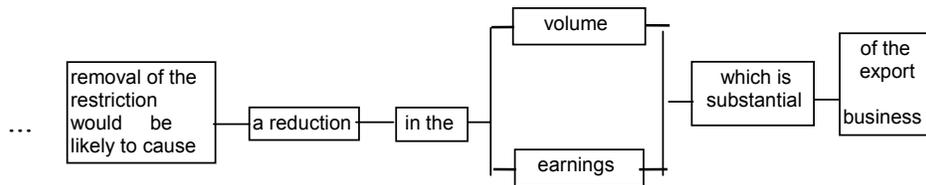
INTERPRETATION 1 'substantial' qualifies 'business'



INTERPRETATION 2 'substantial' qualifies 'reduction'⁸⁹



INTERPRETATION 3 'substantial' qualifies 'volume or earnings'



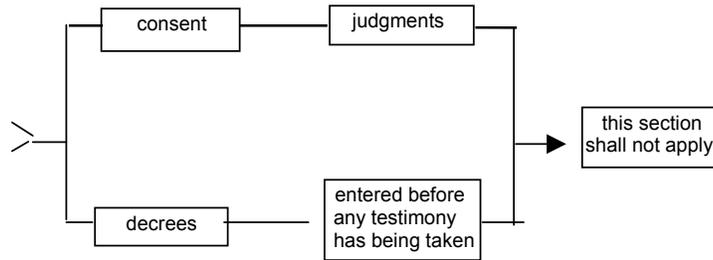
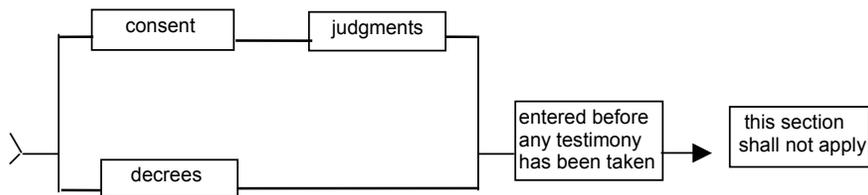
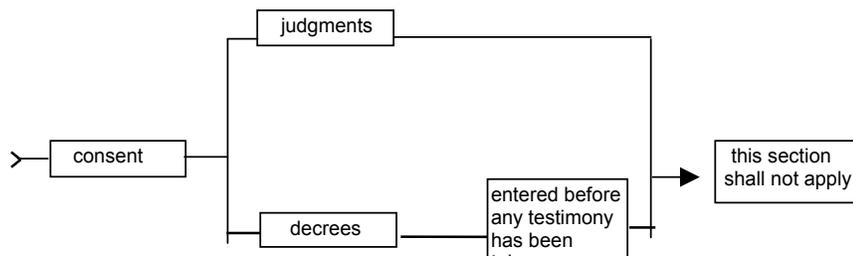
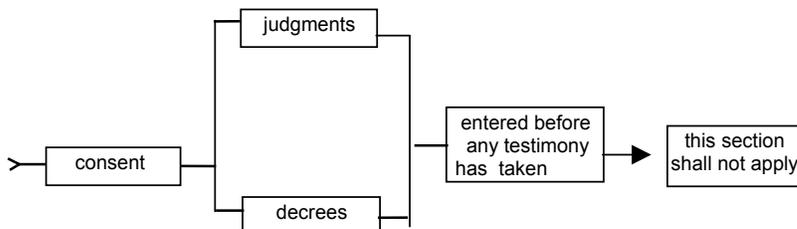
The Restrictive Practices Court adopted interpretation 2, holding that the statute required a substantial reduction in the whole business, even if it was a small export business. A small reduction in a substantial export business was not caught by the section.

*Counsel for the Association*⁹⁰ relies on a strict grammatical construction of the paragraph. He says the word "which" naturally refers to the immediately antecedent noun "business". He submits further that, if counsel for the registrar's construction⁹¹ is correct, it should read "business which would be substantial" and not "is". While we recognise (sic) the force of counsel for the Association's argument based on the strict grammar of the paragraph, we do not think that it is the correct construction. We think that, without doing violence to the words of the paragraph, it can be read in the manner suggested by counsel for the registrar. We think that is what Parliament intended ... it seems reasonably clear that Parliament's mind is directed to a substantial reduction in exports.⁹²

4. **SECTION 5(a) CLAYTON ACT, 1914**⁹³

A final judgment ... brought by or on behalf of the United States under the antitrust laws to the effect that a defendant has violated said laws shall be prima facie evidence against such defendant in any action ... under section 15a of this title ... provided, That this section shall not apply to consent judgments or decrees entered before any testimony has been taken

There are four competing constructions of the proviso:-

INTERPRETATION 1INTERPRETATION 2INTERPRETATION 3INTERPRETATION 4

Under the first and third interpretations section 5(a) would not apply to a consent judgment entered after the completion of evidence. Under the second interpretation section 5(a) would not apply to a decree entered on a motion for summary judgment. In all probability interpretation 4 is the most appropriate structural interpretation⁹⁴.

Ambiguity because of the misuse of 'and', 'or' and 'and/or'

A significant source of syntactic ambiguity is the ambiguous use of 'and' and 'or'. The principal difference between the words is that 'and' is usually conjunctive, whilst 'or' is usually disjunctive - but not always. Early English treatises on interpretation make it clear that the primary difference between 'and' and 'or' is not constant. An unknown author writing in about 1571 says that 'and' will be treated 'disjunctively' (that is, as meaning 'or') when '*... two suche thinges so contraryant are coupled together that they can not drawe under one yoche*'.⁹⁵ Edmund Plowden in 1799 suggests that '*And in many cases words spoken in the copulative shall be taken in the disjunctive, if such sense be most strong against those that speak them*'⁹⁶ - that is, 'and' can be interpreted to mean 'or'.

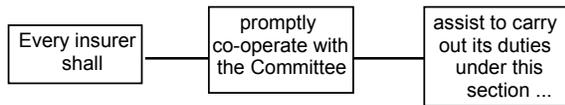
In *Marsden v. Reid*⁹⁷ the Chief Judge, Lord Ellenborough, when interpreting a marine insurance policy said: - '*I think that the voyage insured to Palermo, Messina, and Naples, meant a voyage to all or any of the places named; with this reserve only, that if the ship went to more than one place she must visit them in the order described in the policy*'.⁹⁸ Having already held in *Marsden v. Reid*⁹⁹ that 'and' could be interpreted to mean 'or', Lord Ellenborough, in *Moorsom v. Page*¹⁰⁰ held that the use of 'or' made no difference. His Lordship held in *Moorsom v. Page*¹⁰¹ that an agreement to load 'a full and complete cargo, consisting of copper, tallow, and hides, or other goods ...' was satisfied by a full load of tallow and hides.

'And' has sometimes been construed as disjunctive. In *Associated Artists Limited v. Inland Revenue Commissioners*¹⁰² the objects of a theatrical company included 'to present classical, artistic, cultural, and education dramatic works.' Justice Upjohn decided that the sub-clause was to be read disjunctively. The company could therefore present a classical play, an artistic play, a cultural play or an educational play¹⁰³ - and the first three categories need not be educational.

'And' has of course also been construed to be conjunctive. In *Re Best*¹⁰⁴ a bequest to 'charitable and benevolent institutions' was held to mean institutions which were both charitable and benevolent. '*I see no reason for reading the conjunction "and" as "or"*'.¹⁰⁵ On the other hand, in *Re Eades*¹⁰⁶ a bequest to 'religious, charitable, and philanthropic objects' was held to mean that '*religious objects, and charitable objects and philanthropic objects are within the area of selection - but it is not necessary that any single object should have more than one of these three characteristics*'.¹⁰⁷ Justice Sargant recognised (but rejected) the alternative possible construction - that '*all the objects are to be both religious and charitable and philanthropic*'.¹⁰⁸

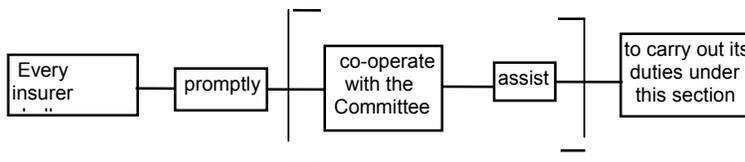
In *Traders Prudent Insurance Co. Limited v. The Registrar of the Workers Compensation Commission of New South Wales*¹⁰⁹ the Commission sought to terminate an insurer's licence on grounds including a breach of section 30A (13A)(c) Workers Compensation Act, 1926 (NSW). The section provided:- *'Every insurer shall promptly co-operate with the Committee and assist to carry out its duties under this section...'*. The Commission argued that the section meant that there were two separate obligations:-

INTERPRETATION 1



Interpretation 1 may be interpreted to mean either of:-

INTERPRETATION 1A

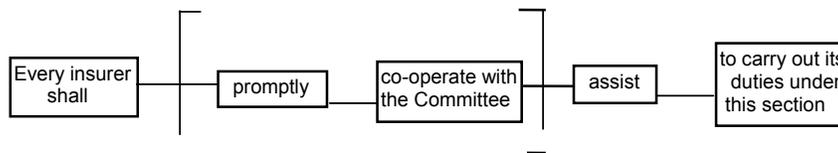


Punctuated, paragraphed and tabulated, interpretation 1A is equivalent to:-

INTERPRETATION 1A.1

- Every insurer shall promptly:-
- (a) co-operate with the Committee; AND
 - (b) assist
- to carry out its duties under this section ...

INTERPRETATION 1B



Punctuated, paragraphed and tabulated, interpretation 1B is equivalent to:-

INTERPRETATION 1B.1

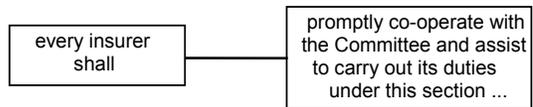
Every insurer shall:-

- (a) promptly co-operate with the Committee; AND
- (b) assist

to carry out its duties under this section ...

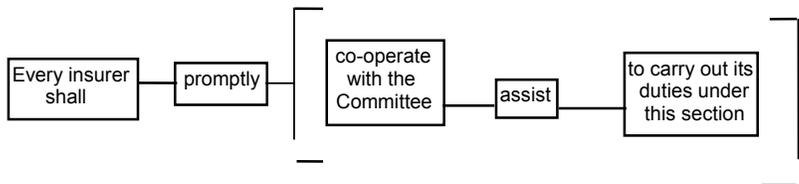
The insurer submitted that the first sentence of the section does not impose two separate obligations but only one - namely, to co-operate promptly with the Committee and to assist it in carrying out its duties¹¹⁰.

INTERPRETATION 2



Interpretation 2 may be interpreted to mean either of:-

INTERPRETATION 2A



Punctuated, paragraphed and tabulated, interpretation 2A is equivalent to:-

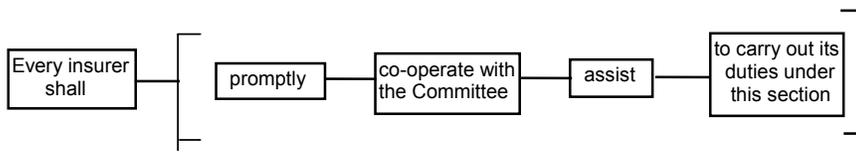
INTERPRETATION 2A.1

Every insurer shall promptly:-

- (a) co-operate with the Committee; AND₁
- (b) assist

to carry out its duties under this section.

INTERPRETATION 2B



Punctuated, paragraphed and tabulated, interpretation 2B is equivalent to:-

INTERPRETATION 2B.1

Every insurer shall:-

- (a) promptly co-operate with the Committee; AND₁
 - (b) assist
- to carry out its duties under this section.

Justice Hope accepted the insurer's submissions¹¹¹, and said:-

It has been submitted for the appellant that the first sentence of the paragraph does not impose two separate obligations on insurers, namely, to co-operate promptly with the Committee, and to assist it to carry out its duties, but one obligation, namely, to co-operate promptly with the Committee and to assist it in carrying out its duties. It is said that this language is, or is analogous to, what is known to the grammarians as a hendiadys. This word is defined in the Shorter Oxford English Dictionary to be a figure of speech in which a single idea is expressed by two words connected by a conjunction, and the example given is "law and heraldry" as meaning "heraldic law". I think that the construction placed upon the paragraph for the appellant is the correct one. I find it difficult to imagine that by the paragraph it was intended to impose on insurers an obligation to co-operate with the Committee without some indication of the matters in respect of which they were required to co-operate with that body. Despite the grammatical difficulties which are involved, I think that the area in respect of which it was intended to propose the obligation of prompt co-operation was the carrying out of the Committee's duties under s. 30A and under s. 6 of the Workers Compensation (Silicosis) Act, 1942-1946¹¹². So construed, the paragraph has a reasonably clear operation, and since this is a possible construction, and the paragraph is obviously designed to bring the conduct which it describes within the grounds upon which a licence may be terminated or suspended, I think it is proper that this more limited construction should be given to it than the wider one which was preferred by the

*Commission.*¹¹³

In *Federal Steam Navigation Co Limited v. Department of Trade and Industry*¹¹⁴ Lord Wilberforce, Lord Simon of Glaisdale, and Lord Salmon, in the House of Lords (with Lord Reid, and Lord Morris of Borth-y-Gest, dissenting) decided that 'or' should be interpreted to mean 'and' in section 1 of the Oil in Navigable Waters Act 1955 (Eng.). The section provided:- *'If any oil ... is discharged ... from a British ship ... the owner or master of the ship shall ... be guilty of an offence ...'*. The Court upheld the convictions of both the owner and the master. In *Monte Ulia v. Banco*¹¹⁵ the Court of Appeal read 'or' in a statute as meaning 'either ... or ..., but not both'. In *R v. Oakes*¹¹⁶ the Court *'will read "or" for "and"'* in Official Secrets Act, 1920 (Eng.).

The first criminal sentenced to death after Massachusetts changed its capital punishment from hanging to electrocution unsuccessfully argued to the Massachusetts Supreme Court in *Storti v. Commonwealth*¹¹⁷ that electrocution was 'cruel or unusual punishments' under the Massachusetts Constitution, and hence unconstitutional. The court held that:- *'the word "unusual" must be construed with the word "cruel" and cannot be taken so broadly as to prohibit every humane improvement not previously known in Massachusetts.*^{118'} The court interpreted 'or' as 'and' so that death by electrocution was not unconstitutional (since it was not also cruel).

A further problem occurs in the use of the expression 'and/or'. Justice Abbott in *In the Estate of Phoebe Playfair, Deceased*¹¹⁹ described the text as a *'slipshod and blundering phrase*^{120'}, and considered *'the use of the phrase "and/or" as bad draftsmanship.*^{121'} In *Cuthbert v. Cumming*¹²² the Court considered a charterparty which required the plaintiff's ship *'... to receive and take on board from the defendant or his agents a full and complete cargo of sugar, molasses and/or other lawful produce ...'* - that is to say:-

s , m , and/or p

where 's' represents 'sugar'

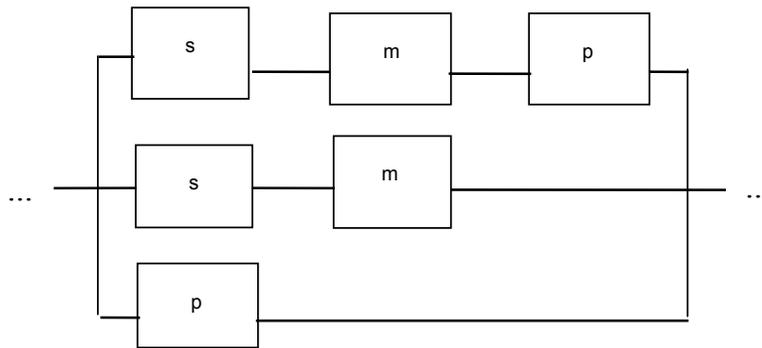
'm' represents 'molasses'

'p' represents 'other lawful produce'

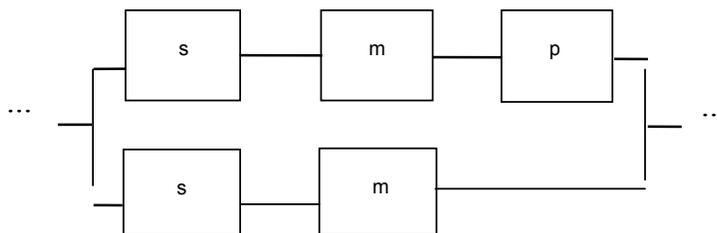
The trial judge, Baron Martin, agreed with the shipowner that 'and/or' was conjunctive¹²³ - that is:-

s m p

Both appellate courts agreed with the shipper that the shipper satisfied his obligations by loading the ship with sugar and molasses (but not, for example, also cocoa) even though the ship was not thereby filled. In the Court of Exchequer Baron Alderson said:- '*... according to the contract, the parties were either to load a full and complete cargo of sugar and molasses, and other lawful produce, or a full cargo of sugar and molasses, or a full cargo of other lawful produce, leaving it open in every way ...*'¹²⁴. This is the equivalent of:-



In the further appeal to the Court of Exchequer Chamber Justice Coleridge said:- '*According to the construction which we put upon the contract ... the merchant had his option of loading a cargo of sugar and molasses with or without the other things.*'¹²⁵ This is the equivalent of:-



Justice Cresswell commented briefly:- '*... the merchant had the right to elect and furnish a cargo of sugar and molasses alone ... he had the right to elect, and to treat the contract as a contract to supply a cargo of sugar and molasses only.*'¹²⁶ This is the equivalent of:-



Even when the disjunctive relationship ('OR') is intended, nevertheless the meaning may be obscure. This is because there are two related, but distinguishable, types of disjunction - and the distinction is rarely appreciated. The statement '*a* or *b*' may be interpreted to mean either:-

- (i) $a \text{ OR } b$ (but not both $a \text{ AND } b$). This is exclusive (or strong) disjunction; OR
- (ii) $(a \text{ OR } b) \text{ OR } (\text{both } a \text{ AND } b)$. This is inclusive (or weak) disjunction.

The statement 'The door is open or [the door is] closed' is an example of exclusive disjunction - both alternatives (i.e. door open and door closed) cannot be true: one (unspecified) alternative is true, and the other is false. When a mother yields to her child's request, and says:- 'Take a biscuit or [take] a piece of cake', the mother's statement is exclusive disjunction - she certainly does not want the child to have both a biscuit and cake. On the other hand if the mother said to her child:- 'Would you like salt or [would you like] pepper with your meal?' the mother would hardly be disconcerted if the child had both - this is an instance of inclusive disjunction.

Latin was much neater than English. Whereas English used the same word, 'or', to convey two separate concepts, Latin had two separate words corresponding to the two different senses of 'or'. The Latin word, 'aut', indicated an absolute alternative (i.e. strong, or exclusive, disjunction: $(a \text{ OR } b) \text{ AND NOT } [\text{both } a \text{ AND } b]$). The Latin word, 'vel', connected alternatives which rested in choice (i.e. weak, or inclusive, disjunction: $(a \text{ OR } b) \text{ OR } [\text{both } a \text{ AND } b]$). In both logic and mathematics, disjunction is usually taken to be in the inclusive form. Where clarity and precision are essential, it is easy to avoid this form of syntactic ambiguity. If exclusive disjunction is intended, the drafter should write in the form ' $(a \text{ OR } b) \text{ AND NOT } (\text{both } a \text{ AND } b)$ '. If inclusive disjunction is intended, the drafter should write in the form ' $(a \text{ OR } b) \text{ OR } (\text{both } a \text{ AND } b)$ '.

Professor Layman Allen recommends an understanding of modern symbolic logic to reveal the precise issues, to enable the issues to be formulated in relatively precise and unambiguous terms, and to mark the limits within which a situation is open for judicial choice and discretion¹²⁷. Professor Allen correctly submits that an understanding of logic increases one's sensitivity to the tricky nature of English prose¹²⁸. Neither formal logic nor symbolic logic is a wonder-device capable of solving every difficulty in interpretation. However complexities in language are often revealed through an understanding of logic. Logic will better clarify the issues, and will show the implications of making a particular choice - but logic will not supply criteria for making the selection between alternatives - whether semantic or syntactic. At its lowest level, lawyers and drafters must understand each of the

syntax forms:- 'AND'; 'OR'; 'NOT'; 'IF ... THEN ...'; and 'IF, AND ONLY IF, ... THEN ...'. An understanding of each of 'because' and 'unless' is also helpful.

1. '*And*' is usually the logical replacement for 'also', 'although', 'but', 'furthermore', 'however', and 'moreover'. 'And' is usually the logical meaning of the comma, and of the semicolon, in a sentence when used to separate distinct things or concepts. Usually conditions connected by 'and' must each be fulfilled to produce the consequence stated in the particular legal rule¹²⁹.

'And' is used as a connector:-

- (a) *within* sentences; AND₂
- (b) *between* sentences (that is to say, as a shorthand method of joining two separate sentences sharing common features).

Between-sentence structural terms relate complete sentences to other complete sentences. Within-sentence structural terms relate sentence-parts to either other sentence-parts or to complete sentences¹³⁰. Professor Layman Allen recommends using 'AND₁' as the within-sentence connector, and 'AND₂' as the between-sentence connector¹³¹. On this analysis the sentence 'Michael wants bread and butter' when meaning 'Michael wants [bread and butter]' would be written as 'Michael wants bread AND₁ butter'; when the drafter seeks to mean '[Michael wants bread] and [Michael wants butter]' the drafter writes 'Michael wants bread AND₂ butter'.

Until uniformity in language is achieved, 'and' should be expressly stated to be conjunctive, and not disjunctive. If conjunction is intended, legislative text should be in one of the following forms:- 'jointly *a* AND₂ *b*' or 'both *a* AND₂ *b*'. If the statement '*a* and *b*' expresses a conjunction, the statement is true when both *a* and *b* are true, but not otherwise. This does not impinge on the relational meaning of 'and'. The statement 'person-p1 and¹³² person-p2 are twins' asserts a relationship between person-p1 and person-p2: the relationship is equivalent to the statement 'person-p1 is a sibling of person-p2, AND₂ person-p2 is a sibling of person-p1'.

2. '*Or*' usually connotes a disjunctive relationship - but the word is often used conjunctively. Logically, disjunction requires at least one condition of the statement to apply, whether or not the other condition applies. Satisfying one or more of the conditions connected by 'or' is

sufficient to produce the consequence stated in the particular legal rule¹³³. This is the Latin 'vel' (inclusive [or weak or non-exclusive] disjunction), rather than the Latin 'aut' (exclusive [or strong] disjunction). Until uniformity in language is achieved, and until it is universally agreed that 'or' is inclusively disjunctive, legislative text should expressly state the intended meaning.

(a) If inclusive disjunction is intended, write any of:-

- 2.1 (1) a ; OR₂
 (2) b ; OR₂
 (3) both:-
 (i) a ; AND₁
 (ii) b
- 2.2 (1) either:-
 (i) a ; OR₂
 (ii) b ; OR₂
 (2) both:-
 (i) a ; AND₁
 (ii) b
- 2.3 any one OR₂ more of:-
 (1) a ; OR₂
 (2) b .

If the statement ' a or b ' expresses an inclusive disjunction, it is true when at least one component (either a or b) [or more than one component] is true, but not otherwise.

(b) If exclusive disjunction is intended, write any of:-

- 2.4 (1) a ; OR₂
 (2) b ; AND₁

NOT both:-

- (i) a ; AND₁
- (ii) b

2.5 either:-

- (1) a ; OR₂
- (2) b ;

AND₁ NOT both:-

- (i) a ; AND₁
- (ii) b

2.6 only one of:-

- (1) a ; AND₂
- (2) b ;

AND₁ NOT both:-

- (i) a ; AND₁
- (ii) b ¹³⁴

If the statement ' a or b ' expresses an exclusive disjunction, it is true when one only component (either a or b ; but not both) is true, but not otherwise.

'Or' is used as a connector

- (a) *within* sentences; AND₂
- (b) *between* sentences (that is to say, as a shorthand method of joining two (or more) separate sentences sharing common features).

Professor Layman Allen recommends using 'OR₁' as the within-sentence connector, and 'OR₂' as the between-sentence connector¹³⁵. On this analysis the natural-language sentence 'Michael wants bread or butter' when meaning 'Michael wants [bread or butter]' would be written as 'Michael wants bread OR₁ butter'; when the drafter wants to mean '[Michael wants bread] or [Michael wants butter]' the drafter writes 'Michael wants bread OR₂ butter'.

- 3. '*Not*' is the logical equivalent of expressions such as 'it is not the case that', 'it is not so that', 'it

is false that', and 'it is not true that'. 'NOT' denies a proposition. The proposition, 'NOT-*a*', is true when *a* is false, but NOT OTHERWISE'. When *a* is true, the negation of *a* is false.

4. 'If *a*, then *b*' usually expresses a conditional (or hypothetical) statement. The conditions which follow "IF" are sufficient to produce the consequence stated in the particular legal rule¹³⁶. The expression usually has the same meaning as '*a* implies *b*', '*a*, only IF *b*', 'IF *a*, *b*', 'in case *a*, *b*', 'should *a*, *b*', 'whenever *a*, *b*', '*a* is a sufficient condition for *b*', '*b* is implied by *a*', '*b*, IF *a*', '*b*, only IF *a*', and '*b*, provided that *a*'¹³⁷. The statement is false only when *a* is true, and *b* is false. The statement is true when both *a* and *b* are true; and the statement is sometimes true and sometimes false when *a* is false. The truth of *b* can be inferred from the truth of *a*; and the truth of *a* is logically relevant to, and necessary for, the truth of *b*.

Drafters must understand that 'IF *a*, THEN *b*' is not logically equivalent to 'IF *b*, THEN *a*'; and that '*a* is a necessary condition for *b*' is logically equivalent to 'IF *a*, THEN *b*'. 'IF *a*, THEN *b*' simply states that *a* is one (of possibly many) causes of *b*: it does not propound that *a* is the only cause of *b*; it leaves open the possibility that *b* may result from a cause other than *a*.

Sometimes the conditional natural-language statement, 'IF *a*, THEN *b*', is more appropriately interpreted as '(IF *a*, THEN *b*) AND₂ (IF NOT-*a*, THEN *c*)': in other words, something more is being stated when the antecedent of the conditional statement is not satisfied. This is the interpretation which Professor Layman Allen categorises as 'IF *a* THEN *b*, BUT OTHERWISE, *c*'¹³⁸.

Sometimes the conditional natural-language statement appears in the form '(if *a*, then *b*), and (if not-*a*, then not-*b*)' - or this form is the most appropriate structural interpretation of the natural-language statement. This is a particular instance of '(IF *a*, THEN *b*); AND₂ (IF NOT-*a*, THEN *c*)': 'NOT-*b*' is used instead of *c*. This is the interpretation which Professor Layman Allen categorises as 'IF *a*, THEN *b*, BUT OTHERWISE, NOT': and it is logically equivalent to the bi-conditional 'IF, AND ONLY IF, *a*, THEN *b*'.

Drafters must be careful if *b* is a conjunction of two or more statements, for example:- 'IF *a*, THEN [*x* AND *y*]'¹³⁹; and 'IF NOT-*a*, THEN NOT-*[x AND y]*'. This is *not* the same as 'IF *a*, THEN [*x* AND *y*], BUT OTHERWISE, NOT': by De Morgan's Rules 'IF *a*, THEN [*x* AND

y], AND IF NOT- a , THEN NOT- $[x$ AND $y]$ ' is the same as 'IF a , THEN $[x$ AND $y]$ '; AND IF NOT- a , THEN $[$ NOT x OR¹⁴⁰ NOT- $y]$ '.

5. 'If and only if a , then b ', and ' a is a necessary and sufficient condition for b ' each express an equivalence relationship between a and b : a and b are logically equivalent statements. The conditions which follow "IF" are necessary and sufficient to produce the consequence stated in the particular legal rule¹⁴¹. The bi-conditional expressing the material equivalence between a and b is a tautology. The statement is true when both a and b are true; it is false when either (but not both) a or b is false; and it is sometimes true and sometimes false when both a and b are false. 'IF AND ONLY IF a , THEN b ' is significantly different from 'IF a , THEN b '. From 'IF AND ONLY IF a , THEN b ' one can deduce each of 'IF a , THEN b ' and 'IF b , THEN a '; from 'IF a , THEN b ' nothing can be deduced. The more common erroneous conclusion is to argue 'IF a , THEN b ; NOT- a ; therefore NOT- b '. Such an argument is clearly fallacious: this is demonstrated by considering the argument 'IF person- $p1$ is in Sydney, THEN person- $p1$ is in Australia; person- $p1$ is NOT in Sydney; therefore person- $p1$ is NOT in Australia'¹⁴². Drafters rarely use the format 'IF AND ONLY IF a , THEN b ' - even when the drafter intends ' a is a necessary and sufficient condition for b '. Drafters invariably seek to establish what conditions are sufficient to reach a specific conclusion: this is the format 'IF a , THEN b '. The difficulty arises when one does not have fact a , but nevertheless seeks (fallaciously) to conclude b .

In a document, the concept 'if fact a is established, then legal consequence b follows' is correctly interpreted to mean that the drafter has stated only one of the possible factual antecedents $[a]$ which implies the legal consequence $[b]$; facts other than a might also result in b , but the document is silent on such consequences. Professor Layman Allen correctly suggests that courts often apply the maxim 'expressio unius est exclusio alterius'; and hold that by explicitly stating what antecedent $[a]$ implies the consequence $[b]$, the drafter intends that b will follow ONLY when a is established¹⁴³. In other words, the implication 'IF a , THEN b ' is incorrectly converted by interpretation into the co-implication 'IF AND ONLY IF a , THEN b '.

6. 'Because' used in the format of ' a because b ' is usually interpreted to mean one of:-

- 6.1 (i) a ; AND₁
 (ii) b

- 6.2 (i) b ; AND₁
(ii) IF b , THEN a ;
- 6.3 (i) b ; AND₁
(ii) IF b , THEN a ; AND₁
(iii) a

The three interpretations might result in any of the following senses:-

- (a) a from b by virtue of logical inference, that is, determined by a specified logical system;
- (b) a from b by virtue of Mother Nature, that is, determined by the laws of nature;
- (c) a from b by virtue of a legal decision, that is, determined by the operation of the legal system; and
- (d) a from b by virtue of a combination of one or more of the three preceding paragraphs.

7. 'Unless' is a troublesome connector. It often appears as ' a unless b '. The connector can be used to mean any one of:-

7.1 'IF NOT- b , THEN a ' (in the sense of logical implication: a single IF-THEN interpretation); and

7.2 '(a) IF NOT- b , THEN a ; AND₂ (b) IF b , THEN NOT- a ' (in the sense of a special material implication - but not the usual material implication of equivalence, 'IF AND ONLY IF b , THEN a '). This is a double IF-THEN interpretation, and is identified by Professor Layman Allen's 'IF ... THEN ..., BUT OTHERWISE, NOT'. Interpretation 7.2 is logically deducible from interpretation 7.1¹⁴⁴, and says more than interpretation 7.1;

7.3 'and' (in the sense of logical conjunction - that is:- ' a AND₂ NOT- b ');

and the context rarely determines which use is intended. Professor Layman Allen in *Language, Law and Logic: Plain Legal Drafting for the Electronic Age*¹⁴⁵ convincingly illustrates 4,128 different categories of meaning of 'unless' (jointly with other ambiguous

connecting words).

Understanding logical relationships helps to avoid common errors:-

- (a) a , if b is usually interpreted to mean:-
IF b , THEN a
- (b) a , only if b is usually interpreted to mean:-
IF a , THEN b
- (c) b , even though a is usually interpreted to mean:-
IF [a OR₁ if NOT- a], THEN b ¹⁴⁶
- (d) given that a , b is usually interpreted to mean:-
IF a , THEN b
- (e) a implies b is usually interpreted to mean:-
IF a , THEN b
- (f) if a , b is usually interpreted to mean:-
IF a , THEN b
- (g) in case a , then b is usually interpreted to mean:-
IF a , THEN b
- (h) subject to a , b is usually interpreted to mean:-
IF a , THEN b
- (I) should a , b is usually interpreted to mean:-
IF a , THEN b
- (j) when a , b is usually interpreted to mean:-
IF a , THEN b
- (k) whenever a , b is usually interpreted to mean:-

IF a , THEN b

- (l) where a, b is usually interpreted to mean:-
IF a , THEN b
- (m) whether or not a, b is usually interpreted to mean:-
IF [a OR₁ NOT- a], THEN b ¹⁴⁷
- (n) a is a sufficient condition for b is usually interpreted to mean:-
IF a , THEN b
- (o) b is implied by a is usually interpreted to mean:-
IF a , THEN b
- (p) b if a is usually interpreted to mean:-
IF a , THEN b
- (q) b , provided that a is usually interpreted to mean:-
IF a , THEN b

Sometimes the connector is interpreted as a conjunction, a AND₂ b .

- (r) a , if and only if, b is usually interpreted to mean:-
 a is equivalent to b

There are fixed logical relationships between propositions (regardless of the truth or falseness of the propositions). Arguments or inferences based on propositions are either valid or invalid - that is, the arguments either follow logically and the conclusion is derived from the premises, or they do not. There are 9 elementary valid argument forms (or rules of inference), the validity of which can be established by logical truth tables¹⁴⁸.

1. *Modus ponens*

IF a , THEN b

a

Therefore, b

2. *Modus tollens*

IF a , THEN b

NOT- b

Therefore, NOT- a

3. *Hypothetical syllogism*

IF a , THEN b

IF b , THEN c

Therefore, IF a , THEN c

4. *Disjunctive syllogism*

a OR b

NOT- a

Therefore, b

5. *Constructive dilemma*

[IF a , THEN b] AND [IF c , THEN d]

a OR c

Therefore, b OR d

6. *Destructive dilemma*

[IF a , THEN b] AND [IF c , THEN d]

NOT- b OR NOT- d

Therefore, NOT- a OR NOT- c

7. *Simplification*

a AND b

Therefore, a

8. *Conjunction*

a

b

Therefore, a AND b

9. *Addition*

a

Therefore, a OR b

There are also 10 logical rules of replacement (or principles of extensionality).

10. *De Morgan's Rules*¹⁴⁹

NOT- $[a$ AND $b]$ is equivalent to $[$ NOT- a OR NOT- $b]$

NOT- $[a$ OR $b]$ is equivalent to $[$ NOT- a AND NOT- $b]$

11. *Commutation*

$[a$ OR $b]$ is equivalent to $[b$ OR $a]$

$[a$ AND $b]$ is equivalent to $[b$ AND $a]$

12. *Association*

$[a$ OR $(b$ OR $c)]$ is equivalent to $[(a$ OR $b)$ OR $c]$

$[a$ AND $(b$ AND $c)]$ is equivalent to $[(a$ AND $b)$ AND $c]$

13. *Distribution*

$[a$ AND $(b$ OR $c)]$ is equivalent to $[(a$ AND $b)$ OR $(a$ AND $c)]$

$[a$ OR $(b$ AND $c)]$ is equivalent to $[(a$ OR $b)$ AND $(a$ OR $c)]$

14. *Double negation*

a is equivalent to $[$ NOT NOT- $a]$

15. *Transportation*

$[$ IF a , THEN $b]$ is equivalent to $[$ IF NOT- b , THEN NOT- $a]$

16. *Material implication*

$[$ IF a , THEN $b]$ is equivalent to $[$ NOT- a OR b ¹⁵⁰ $]$

17. *Material equivalence*

$[a$ is equivalent to $b]$ is equivalent to $[($ IF a , THEN $b)$ AND $($ IF b , THEN $a)]$

$[a$ is equivalent to $b]$ is equivalent to $[(a$ AND $b)$ OR $($ NOT- a AND NOT- $b)]$

18. *Exportation*

[(IF a AND b), THEN c] is equivalent to [IF a , THEN (IF b , THEN c)]

19. *Tautology*

a is equivalent to [a OR a]

a is equivalent to [a AND a]

Drafting is not a game of words, with umpires enforcing technical rules to trap the unwary and make hapless players look foolish. It is a vital part of the system of administering justice. The system aims to produce just and predictable outcomes¹⁵¹. Language being the process of use and change, it is unlikely that semantic ambiguity can ever be eradicated¹⁵². It is the unintentional syntactic uncertainties which must be avoided.

Conclusions

1. Draft using:-

- (a) indentation AND₁ paragraph numbering (for layout clarity); AND₁
- (b) a subscript on the language connectors, 'AND', and 'OR', for interpretative clarity.

Drafters should use:-

- (a) 'AND₁' to signal the logical relationship of intersection (or union) of two parts of *one* (corresponding to the subscript) sentence. 'AND₁' is interpreted as a [sentence-part]-connecting 'and' 'within-sentence' use;
- (b) 'AND₂' to signal the logical relationship of conjunction of *two* (corresponding to the subscript) complete sentences. 'AND₂' is interpreted as a [full-sentence]-connecting 'and' 'between sentence' use.

A similar procedure should be used with 'OR'.

2. Do not routinely use the format ' a means b , and includes c .' If that concept is to be used, then draft in the format:-

- (a) a **means** b **OR**₂ c ; AND₂
- (b) a **includes** b **AND**₂ c .

This is an abbreviated way of saying:-

- (a) a means at least one, but possibly both, of b or c ; AND₂
 - (b) a includes each of b AND₂ c , but there are other unspecified things which are included in the category of a .
3. Do not routinely use the format ' a means b , and includes c , but does not include d '. If that concept is to be used, then draft in the format:-
- (a) a means b ; AND₂
 - (b) c is an a ; AND₂
 - (c) d is NOT an a .

4. Drafters must understand principles of law, the facts, and the structure of language. The goal is clarity, precision, simplicity, and brevity. Understanding logic should help to avoid syntactic ambiguity specifically, and vagueness generally. If not a full understanding of formal logic, then at least a cursory awareness should be a tool of the drafter. Complexities in language are often revealed through an understanding of logic. Logic will better clarify the issues, and show the implications of making a particular choice - but logic will not supply criteria for making the selection between alternatives - whether semantic or syntactic.
5. Lawyers and drafters must understand each of the syntax forms:- 'AND'; 'OR'; 'NOT'; 'IF ... THEN ...'; AND₂ 'IF AND ONLY IF ... THEN ...'. An understanding of 'because' AND₂ 'unless' is also helpful.
6. Documents would be easier to understand if legal rules were drafted in the form of an 'IF ... THEN ...' proposition, namely, 'IF condition-*a* is fulfilled, THEN result-*b* occurs'.
7. The awareness of the need to avoid syntactic ambiguities will:-
 - (a) increase the precision of communication between the drafter and the interpreter; AND₁
 - (b) make the drafter astute to draft documents so as not to contain syntactic ambiguities; AND₁
 - (c) alert the drafter against the inadvertent inclusion of syntactically ambiguous statements; AND₁
 - (d) serve as a convenient reminder which will help the drafter to be clear (when clarity is intended); AND₁
 - (e) ensure that any syntactic ambiguity incorporated in a document is intentional, not inadvertent; AND₁
 - (f) minimise the need for judicial legislation, insofar as that need arises from drafting ineptitude; AND₁
 - (g) enable the drafter to catalogue the permutations AND₂ combinations of meanings which are possible alternatives to a syntactically ambiguous provision; AND₁
 - (h) assist the drafter to decide which of several competing interpretations of a syntactically ambiguous provision should be accepted as the most appropriate alternative.

Section 7(1) Firearms Act 1996

Section 7(1) Firearms Act 1996 provides:-

A person must not possess or use a firearm unless the person is authorised to do so by a licence or a permit. ...

This may be interpreted to mean either of the following:-

- A1. A person MUST NOT
- (i) possess OR₂
 - (ii) use
- a firearm unless the person is authorised to do so by a licence OR₂ a permit ...
- A2. A person MUST
- (i) NOT possess OR₂
 - (ii) use
- a firearm unless the person is authorised to do so by a licence OR₂ a permit ...

Interpretation A2 is a far-fetched (but yet logically possible) structural interpretation: the legislature is most unlikely to prohibit possession, but yet mandate use. It would be perverse for the legislature to impose an unqualified prohibition on possession of a firearm, but yet to obligate use of a firearm when authorised by a licence or permit. Banning use with possession (even when licensed), but yet allowing use without possession (even when licensed) is an irregular (even if possible) use of language. The legislature's argument, presumably, is that the context makes it clear that each of 'not' and 'a firearm' refer to both 'possess' and 'use'. Nevertheless the need for that argument is unnecessary if the drafter adopted the format in interpretation A1.

The intrinsic abnormality of interpretation A2 is shown by omitting the possession component from the subsection, and interpreting 'unless' as the single conditional, 'IF NOT ... THEN ...'. Section 7(1) Firearms Act 1966 would then provide:-

- A3. *A person must use a firearm if the person is not authorised to do so by a licence or a permit ...*

Although drafting in the format of interpretation A1 is the preferable (leaving aside the scope of ‘unless’) methodology, interpretation A2 could have been avoided as being a possible interpretation if the parliament had used the common grammatical format for the denial of two alternatives, that is: ‘neither ... nor ...’. However this format neither resolves the scope of interpretation of ‘unless’ nor determines whether a conditional statement or a bi-conditional statement is intended. Section 7(1) of the Act would then have been drafted as follows:-

A person must neither possess nor use a firearm unless the person is authorised to do so by a licence or a permit ...

This would be interpreted to mean the following:-

- A4. A person MUST
- (i) neither possess
 - (ii) NOR₂ use
- a firearm unless the person is authorised to do so by a licence OR₂ a permit ...

The more interesting interpretation quandary is the scope of ‘unless’ in the subsection: is it to be interpreted as a conditional connector, or as a bi-conditional connector? Statement A1 can be interpreted as one of the following:-

- A5. A person MUST NOT
- 1. possess OR₂
 - 2. use
- a firearm
- IF the person is NOT authorised to do so by
- 3. a licence OR₂
 - 4. a permit ...

A5 is logically equivalent to A6:-

- A6. IF
- [a] person is NOT authorised to do so by
- 1. a licence OR₂
 - 2. a permit. ...
- [THEN]
- the person MUST NOT

3. possess OR₂
 4. use
- a firearm

In Professor Layman Allen's LEGAL RELATIONS language, A6 is expressed as A7:-

- A7. IF
1. [a] person is NOT authorised to do so by
 2. a licence OR₂
 3. a permit. ...
- THEN
4. the person MUST NOT
 5. possess OR₂
 6. use
- a firearm¹⁵³

A7 is logically equivalent¹⁵⁴ to the nonsensical A8:-

- A8. IF
- [a] person MUST
 1. possess OR₂
 2. use
- a firearm
- THEN
- [the] person is authorised to do so by
3. a licence OR₂
 4. a permit ...

A7 is logically equivalent¹⁵⁵ to A9:-

- A9. IF
1. [a] person is NOT authorised to do so by a licence AND₂
 2. [a] person is NOT authorised to do so by a permit ...
- [THEN]
3. the person MUST NOT possess a firearm AND₂
 4. the person MUST NOT use a firearm

An alternative series of possible interpretations (A10-A12) arises by construing 'unless' as a special variation of the bi-conditional, 'if and only if'.

A10. IF a person is NOT authorised to do so by

1. a licence OR₂
2. a permit ...

THEN [the] person MUST NOT

3. possess OR₂
4. use

a firearm AND₂

IF a person is authorised to do so by

1. a licence OR₂
2. a permit ...

THEN [the] person MUST

3. possess OR₂
4. use

a firearm

From A10 may be deduced¹⁵⁶ A11:-

A11. IF a person is authorised to do so by

1. a licence OR₂
2. a permit ...

THEN [the] person MUST

3. possess OR₂
4. use

a firearm

In Professor Layman Allen's LEGAL RELATIONS language, A10 is expressed as A12:-

A12. IF a person is authorised to do so by

1. a licence OR₂
2. a permit ...

THEN [the] person MUST

3. possess OR₂
4. use

a firearm, BUT OTHERWISE, NOT

4. use
a firearm.

Endnotes

¹In Statute Law Society *Renton and the Need for Reform* Sweet & Maxwell Ltd, London, England, 1979, at 52. Sir Courtney Ilbert in *The Mechanics of Law Making* Columbia University Press, New York, USA, 1914, at 25, gives the same text (taken from King Edwards' *Discourse on the Reformation of Abuses*), but gives the year as 1551.

²G.G. Smith *The Diary of Samuel Pepys* Macmillan & Co. Limited, London, England, 1906, at 379-380.

³Great Britain *Papers Relating to the Drawing of Acts of Parliament, and to the Means of Ensuring the Uniformity Thereof, in Language, in Form, in Arrangement, and in Matter* Parl. Papers. House of Commons 1838, in (1837-38) 44 Accounts & Papers 1, J. Harrison & Son, London, England, 1838, at 3.

⁴Great Britain *Papers Relating to the Drawing of Acts of Parliament, and to the Means of Ensuring the Uniformity Thereof, in Language, in Form, in Arrangement, and in Matter* Parl. Papers House of Commons 1838 in (1837-38) 44 Accounts & Papers 1, J. Harrison & Son, London, England, 1838, at 17.

⁵(1979) 144 C.L.R. 374.

⁶(1979) 144 C.L.R. 374, at 381.

⁷*Chaucer's Dreame*, British Library MS Additional 10303; and T. Speght (ed.) *The Works of Our Antient and Larned English Poet, Geoffrey Chaucer, Newly Printed* G. Bishop, London, England, 1598, at 355.

⁸Act 2 scene 3, line 15: P. Alexander (ed.) *Comedies: William Shakespeare* Collins, London, England, 1951, at 283.

⁹(1990) 22 FCR 42.

¹⁰(1990) 22 FCR 42, at 61. The section provided:- 'A disposal of an asset that did not exist (either by itself or as part of another asset) before the disposal, but is created by the disposal, constitutes a disposal of the asset for the purposes of this Part, but the person who so disposes of the asset shall be deemed not to have paid or given any consideration, or incurred any costs or expenditure, referred to in paragraph 160ZH(1)(a), (b), (c) or (d), (2)(a), (b), (c) or (d) or (3)(a), (b), (c) or (d) in respect of the asset.'

¹¹D. Murphy *Submission* Submission by Mr Dennis Murphy QC, N.S.W. Parliamentary Counsel, to House of Representatives Standing Committee on Legal and Constitutional Affairs Into Commonwealth Legislative and Legal Drafting, 4 September 1992: Submission number 25 at 3, para. 9.2. Mr Murphy's principle modifies his earlier view in D. Murphy *Plain English in Drafting Legislation and Regulations* Paper presented to Plain Legal Language for Public Sector Administrators Conference, 29 July 1992, Parliament House, Sydney, Australia, at 3.

¹²Law Reform Commission of Victoria identified precision and intelligibility as the goals of legislative drafting *Access to the Law: The Structure and Format of Legislation* Report No 33, Law Reform Commission of Victoria, Melbourne, Australia, 1990, at 1. The range of meaning of 'precise' is discussed by David Mellinkoff in his book *The Language of the Law* Little, Brown & Company, Boston, USA, 1963, at 383-398.

¹³Hansard Society Commission *Making the Law* Report of The Hansard Society Commission on The Legislative Process. Hansard Society for Parliamentary Government, London, England, 1993, para. 221, at 56.

¹⁴(1943) 317 U.S. 424 (Justice Frankfurter dissented).

¹⁵(1943) 317 U.S. 424, at 431-432.

¹⁶J. Redish *How to Draft More Understandable Legal Documents* Document Design Centre, American Institutes for Research, Washington, USA, 1979, at 5.

¹⁷N.T. Sexton *Legislative Drafting and Law Reform - Post Renton* Paper presented at 3rd Australian Law Reform Agencies Conference, Canberra, Australia, 8-10 May 1976, at 50 (citing the leader in the London Times, 9 May 1975).

¹⁸L.E. Allen & C.R. Engholm *The Need for Clear Structure in "Plain Language" Legal Drafting* (1980) 13 U. Mich. J.L. Ref. 455, at 455. The same point is made in L.E. Allen *Language, Law and Logic: Plain Legal Drafting for the Electronic Age* Paper presented at Advanced Workshop on Computer Science and Law on 17-27 September 1979 at Clyne Castle,

University College of Swansea, in B. Niblett (ed.) *Computer Science and Law* Cambridge University Press, Cambridge, England, 1980, 75, at 90 and 98.

¹⁹[1935] V.L.R. 95.

²⁰(1935) V.L.R. 95, at 95.

²¹(1935) V.L.R. 95, at 95.

²²*Ambiguity and Vagueness in the Criminal Law: An Analysis of Types* (1985) 27 Crim. L.Q. 94, at 98.

²³[1965] N.S.W.R. 946.

²⁴[1965] N.S.W.R. 946, at 950.

²⁵For example, *Tophams Ltd v. Sefton* [1967] 1 A.C. 50.

²⁶(1918) 245 U.S. 418.

²⁷(1918) 245 U.S. 418, at 425.

²⁸Z. Chafee Jnr. *The Disorderly Conduct of Words* (1941) 41 Colum. L. Rev. 381.

²⁹Z. Chafee Jnr. *The Disorderly Conduct of Words* (1941) 41 Colum. L. Rev. 381, at 387.

³⁰*Kirkness (Inspector of Taxes) v. John Hudson & Co, Ltd* [1955] A.C. 696, at 735-736.

³¹L.E. Allen & R. Engholm *A Guide for Legal Draftsmen of Normalized Text* Second Draft, Sponsored by National Science Foundation Research Grant SOC76-10668, 21 April 1978, at 2.

³²J.L. Montrose *Syntactic (formerly Amphibolous) Ambiguity* 1962J M.U.L.L. 65, at 65. See also J.L. Montrose *Mock Turtle: A Problem in Adjectival Ambiguity* 1959D M.U.L.L. 28.

³³Professor of Law, University of Michigan Law School, Michigan, United States of America. From 1958-1966 Professor Allen was associated with Yale Law School.

³⁴L.E. Allen *Some Uses of Symbolic Logic in Law Practice* 1962J M.U.L.L. 119, at 120; and L.E. Allen & M.E. Caldwell *Modern Logic and Judicial Decision Making: A Sketch of One View* in H.W. Baade (ed.) *Jurimetrics* Basic Books Inc., New York, USA, 1963, 213, at 228.

³⁵See section 21(1) Interpretation Act 1987 (N.S.W.); and sections 360(6), 431(3), 440AA(1) and 555 Crimes Act 1900 (N.S.W.).

³⁶Lord Wilberforce in *F L Schuler A.G. v. Wickman Machine Tool Sales Limited* [1974] A.C. 235, at 261. Lord Wright in *G. Scammell & Nephew, Limited v. H.C. & J.G. Ouston* [1941] A.C. 251, at 268, had previously said:- '*Difficulty is not synonymous with ambiguity so long as any definite meaning can be extracted.*'

³⁷R.C. Dick *Legal Drafting in Plain Language* 3rd edn. Carswell, Thomas Professional Publishing, Ontario, Canada, 1995, at 72.

³⁸*Edrich's Case* (1603) 5 Co. Rep. 118a, at 118b; 77 E.R. 238, at 239.

³⁹Lord Hailsham of Marylebone (ed.) *Halsbury's Laws of England* 4th edn. reissue, volume 44, Reed Elsevier (UK) Limited, London, England, 1995, at 915 (para. 1484).

⁴⁰'A thing is known by its companions.'

⁴¹*Scales v. Pickering* (1828) 4 Bing. 448; 130 E.R. 840. Lord Diplock in *Letang v. Cooper* [1965] 1 Q.B. 232, at 247 warned:- '*The maxim noscitur a sociis is always a treacherous one unless you know the societas to which the socii belong.*'

⁴²[1917] 1 K.B. 98.

⁴³25 Edw. 3, stat. 5, c. 2.

⁴⁴[1917] 1 K.B. 98, at 122.

⁴⁵[1917] 1 K.B. 98, at 129: that is, interpretation 2.

⁴⁶[1917] 1 K.B. 98, at 137. In *The Trial of Earl Russell* [1901] A.C. 446 a divorce followed by a second marriage in Nevada, United States of America had been held to be a breach of section 57 of the Offences against the Person Act, 1861 (Eng.) even though occurring beyond the King's dominions.

⁴⁷[1978] A.C. 359.

⁴⁸[1978] A.C. 359, at 385.

⁴⁹[1967] 2 All E.R. 576, 44 T.C. 164.

⁵⁰[1967] 2 All E.R. 576, at 578.

- ⁵¹(a) attain to the age of thirty years; and
 (b) been nine years a citizen of United States; and
 (c) at the time of election be an inhabitant of the State for which he shall be chosen.

⁵²Under this interpretation the only disqualification to election is a combination of:-

- (a) not being an inhabitant of the State;
 with either
 (b) not being thirty years old; or
 (c) not being nine years a citizen.

⁵³The extreme illustration (as well as the general comments) are given by John Hart Ely in *The Limits of Logic: Syntactic Ambiguity in Article One of the U.S. Constitution* 1963S M.U.L.L. 117.

⁵⁴The disjunctive interpretation is logically possible: but one cannot imagine that a court would propound such a fanciful interpretation.

⁵⁵J.H. Ely *The Limits of Logic: Syntactic Ambiguity in Article One of the U.S. Constitution* 1963S M.U.L.L. 117, at 121.

⁵⁶*United States v. Gettysburg Electric Railway Company* (1896) 160 U.S. 668, at 681.

⁵⁷(1962) 370 U.S. 114.

⁵⁸(1962) 370 U.S. 114, at 132 (Justices Stewart and Harlan concurring).

⁵⁹The analysis is based on D. Robertson *Calbeck v. Travelers Insurance Company - Legitimate Use of 'Judicial Legerdemain'* 1966M M.U.L.L. 11, at 19.

⁶⁰Simplification.

⁶¹This follows from interpretations B4 and B5.

⁶²(1962) 370 U.S. 114, at 117 (Justices Stewart and Harlan dissenting).

⁶³Words in upper case are defined terms within Professor Allen's LEGAL RELATIONS language. However Professor Allen does not use 'NOT': he uses 'NEG' as a defined term for 'it is NOT so that ...'.

⁶⁴*Symbolic Logic: A Razor-edged Tool for Drafting and Interpreting Legal Documents* (1957) 66 Yale L.J. 833; *Logic, Law and Dreams* (1957) 52 L. Libr. J. 131; *Towards a More Systematic Drafting and Interpreting of the Internal Revenue Code: Expenses Losses and Bad Debts* (L.E. Allen & G. Orechkoff) [1957] U. Chic. L. Rev. 1; *Towards a Procedure for Detecting and Controlling Syntactic Ambiguity in Legal Discourse* in A. Kent (ed.) *Advances in Documentation and Library Science* vol. 3, part 2, chap. 42. Interscientific Publishers Inc., New York, USA, 1959, at 955; *Some Uses of Symbolic Logic in Law Practice* 1962J M.U.L.L. 119; and *Modern Logic and Judicial Decision Making: A Sketch of One View* (L.E. Allen & M.E. Caldwell) (1963) 28 L. & Contemp. Probs. 213; also in H.W. Baade (ed.) *Jurimetrics* Basic Books Inc., New York, USA, 1963, at 213.

⁶⁵L.E. Allen & T. Ohta *Better Organisation of Legal Knowledge* [1969] U. Toledo L. Rev. 491, at 491 and 526.

⁶⁶(1957) 52 L. Libr. J. 131.

⁶⁷(1957) 52 L. Libr. J. 131, at 139.

⁶⁸A legal rule is fully normalized by expressing both its between-sentence and within-sentence logical structure by means of defined structural terms and indicating the relationships intended between its sentences and sentence parts. = (L.E. Allen & C.S. Saxon *Exploring Computer-Aided Generation of Questions for Normalizing Legal Rules* Paper presented at Second Annual Conference on Law & Technology at University of Houston Law School, June 24-28, 1985, in C. Walter (ed.) *Computing Power and Legal Language: The Use of Computational Linguistics, Artificial Intelligence, and Expert Systems in the Law* Quorum Books, New York, 1988, at 251.) This paper adopts the American spelling of >normalized= when the word is quoted, and otherwise uses the English spelling, >normalised=.

⁶⁹L.E. Allen *Modern Logic, A Useful Language for Lawyers* in E.A. Jones (ed.) *Law and Electronics: The Challenge of a New Era* Matthew Bender & Co. Inc., New York, USA, 1962, at 182.

⁷⁰L.E. Allen & T. Ohta *Better Organisation of Legal Knowledge* [1969] U. Toledo L. Rev. 491, at 492.

⁷¹L.E. Allen & R. Engholm *A Guide for Legal Draftsmen of Normalized Text* Second Draft, Sponsored by National Science Foundation Research Grant SOC76-10668, 21 April 1978, at 23.

⁷²[1959] 2 Q.B. 194. Example given by J.L. Montrose *Syntactic (Formerly Amphibolous) Ambiguity* 1962J M.U.L.L. 65, at 66.

⁷³[1959] 2 Q.B. 194, at 198 (Morris L.J.).

⁷⁴Namely interpretation 2.

⁷⁵[1948] A.C. 549, at 561.

⁷⁶Namely interpretation 2.

⁷⁷Namely interpretation 1.

⁷⁸[1948] A.C. 549, at 555-556.

⁷⁹[1959] 2 Q.B. 194.

⁸⁰In other words, >of the same kind'.

⁸¹[1959] 2 Q.B. 194, at 208.

⁸²[1959] 2 Q.B. 194, at 210, namely interpretation 1.

⁸³[1960] 1 Q.B. 217. Example given by J.L. Montrose *Syntactic (formerly Amphibolous) Ambiguity* 1962J M.U.L.L. 65, at 68.

⁸⁴[1960] 1 Q.B. 217, at 233-234.

⁸⁵[1960] 1 Q.B. 217, at 238-240.

⁸⁶[1960] 1 Q.B. 217, at 233-234.

⁸⁷[1960] 1 Q.B. 217, at 239.

⁸⁸[1959] 3 All E.R. 257. Example cited by J.L. Montrose *Syntactic (Formerly Amphibolous) Ambiguity* 1962J M.U.L.L. 65, at 67.

⁸⁹This interpretation requires a re-arrangement of the statutory text.

⁹⁰Counsel urged for interpretation 1.

⁹¹Namely interpretation 2.

⁹²[1959] 3 All E.R. 257, at 275-276.

⁹³Clayton Act, 1914 (USA), ch. 323 '5, 38 Stat. 730. The Clayton Act, 1914 was enacted on 15 October 1914 as the Antitrust Act, 1914 by the 63rd Congress, Session II, ch. 323, public law no. 212. Current version at 15 U.S.C. '16(a).

⁹⁴Example given by R.H. Stern *Syntactic Ambiguity in Clayton's Act, Section 5(a)*, 1960D M.U.L.L. 129.

⁹⁵*A Discourse upon the Exposition & Understanding of Statutes with Sir Thomas Egerton's Additions* edited by S.E. Thorne from manuscripts in the Huntington Library, San Marino, California, USA, 1942, at 138.

⁹⁶Edmund Plowden's Commentaries. *Chapman v. Dalton* 1 Plow. 286, at 289; 75 E.R. 437, at 442.

⁹⁷[1803] 3 East. 572; 102 E.R. 716.

⁹⁸[1803] 3 East. 572, at 577; 102 E.R. 716, at 718.

⁹⁹[1803] 3 East. 572; 102 E.R. 716.

¹⁰⁰[1814] 4 Camp. 103; 171 E.R. 34.

¹⁰¹[1814] 4 Camp. 103; 171 E.R. 34.

¹⁰²[1956] 2 All E.R. 583.

¹⁰³[1956] 2 All E.R. 583, at 586.

¹⁰⁴[1904] 2 Ch. 354.

¹⁰⁵[1904] 2 Ch. 354, at 356 (Park J).

¹⁰⁶[1920] 2 Ch. 353.

¹⁰⁷[1920] 2 Ch. 353, at 356.

¹⁰⁸[1920] 2 Ch. 353, at 356.

¹⁰⁹[1971] 2 NSWLR 513.

¹¹⁰[1971] 2 NSWLR 513, at 521.

¹¹¹Interpretation 2

¹¹²Interpretation 2.

¹¹³(1971) 2 NSWLR 513, at 521.

¹¹⁴[1974] 1 W.L.R. 505.

¹¹⁵[1971] P. 137.

¹¹⁶[1959] 2 Q.B. 350, at 357.

¹¹⁷(1901) 178 Mass. 549.

¹¹⁸(1901) 178 Mass. 549, at 553.

¹¹⁹[1946] S.A.S.R. 110.

¹²⁰[1946] S.A.S.R. 110, at 117.

¹²¹[1946] S.A.S.R. 110, at 116.

¹²²(1855) 24 L.J. Ex. 198; 156 E.R. 668.

¹²³(1855) 24 L.J. Ex. 198, at 200; 156 E.R. 668, at 671.

¹²⁴(1855) 24 L.J. Ex. 198, at 199; 156 E.R. 668, at 670.

¹²⁵(1855) 24 L.J. Ex. 310, at 312.

¹²⁶(1855) 24 L.J. Ex. 310, at 312.

¹²⁷L.E. Allen & G. Oreckhoff *Towards a More Systematic Drafting and Interpreting of the Internal Revenue Code: Expenses, Losses and Bad Debts* (1957) 25 U. Chi. L. Rev. 1, at 62.

¹²⁸L.E. Allen *Law, Logic and Learning* (1960) 31 Harv. L. Rec. 8, at 9.

¹²⁹G.B. Gray *Statutes Enacted in Normalized Form: The Legislative Experience in Tennessee* in C. Walter (ed.) *Computing Power and Legal Reasoning* West Publishing Company, St. Paul, USA, 1985, at 471.

¹³⁰L.E. Allen & C.S. Saxon *Exploring Computer-Aided Generation of Questions for Normalizing Legal Rules* Paper presented at Second Annual Conference on Law & Technology at University of Houston Law School, June 24-28, 1985, in C. Walter (ed.) *Computing Power and Legal Language: The Use of Computational Linguistics, Artificial Intelligence, and Expert Systems in the Law* Quorum Books, New York, 1988, at 315.

¹³¹Correspondence between Professor Allen and the author in October and November 1997.

¹³²AND₂ in Professor Allen's terminology.

¹³³G.B. Gray *Statutes Enacted in Normalized Form: The Legislative Experience in Tennessee* in C. Walter (ed.) *Computing Power and Legal Reasoning* West Publishing Company, St. Paul, USA, 1985, at 471.

¹³⁴"But NOT [both *a* AND₁ *b*]' is not really necessary because of 'only one'.

¹³⁵Correspondence between Professor Allen and the author in October 1997.

¹³⁶G.B. Gray *Statutes Enacted in Normalized Form: The Legislative Experience in Tennessee* in C. Walter (ed.) *Computing Power and Legal Reasoning* West Publishing Company, St. Paul, USA, 1985, at 471.

¹³⁷Often 'provided that' and >provided however= are used to indicate conjunction.

¹³⁸"IF *a* THEN *b*, BUT OTHERWISE *c*' is interpreted as 'IF *a* THEN *b*, AND IF NEG-*a* THEN *c*'. L.E. Allen *Towards a Normalized Language to Clarify the Structure of Legal Discourse* Paper presented at International Conference on Logic, Informatics, Law at Florence, Italy, 6-10 April 1981, in A.A. Martino, A.A. (ed.) *Deontic Logic, Computational Linguistics and Legal Information Systems: Edited Versions of Selected Papers from the International Conference on "Logic, Informatics, Law" Florence, Italy, April 1981* North-Holland Publishing Company, Amsterdam, The Netherlands, 1982, 349, at 351; *Controlling Inadvertent Ambiguity in the Logical Structure of Legal Drafting by Means of the Prescribed Definitions of the A-Hohfeld Structural Language* (1994) 9(21) *Theoria* 135-172. Paper presented at Conference in Celebration of 25th Anniversary of Istituto per La Documentazione Giuridica of the Consiglio Nazionale Delle Ricerche *Toward a Global Expert System in Law: Selected Examples from Health and Environmental Law* 1-3 December 1993, Florence, Italy.

¹³⁹The brackets are necessary to avoid the interpretation: '[IF *a*, THEN *x*] AND₂ *y*'.

¹⁴⁰Note the disjunction. Using the format for BUT OTHERWISE, NOT, one would have [wrongly] assumed the interpretation, 'IF *a*, THEN [*x* AND *y*], AND IF NOT *a* THEN [NOT *x* AND NOT *y*]'.

¹⁴¹G.B. Gray *Statutes Enacted in Normalized Form: The Legislative Experience in Tennessee* in C. Walter (ed.) *Computing Power and Legal Reasoning* West Publishing Company, St. Paul, USA, 1985, at 471.

¹⁴²Suppose person-p1 was in Melbourne: person-p1 would still be in Australia.

¹⁴³L.E. Allen *Symbolic Logic: A Razor-Edged Tool for Drafting and Interpreting Legal Documents* (1957) 66 Yale L.J. 833, at 842.

¹⁴⁴Simplification.

¹⁴⁵Paper presented at Advanced Workshop on Computer Science and Law on 17-27 September 1979 at Clyne Castle, University College of Swansea, in B. Niblett (ed.) *Computer Science and Law* Cambridge University Press, Cambridge,

England, 1980, at 75. Professor Allen also discusses the range of potential interpretation of >unless= in L.E. Allen & C.R. Engholm *The Need for Clear Structure in "Plain Language" Legal Drafting* (1980) 13 U. Mich. J.L. Ref. 455, at 471-493.

¹⁴⁶The interpretation is the same as 'whether or not'.

¹⁴⁷'Whether or not' has a preclusive role. The consequence, *b*, is unconditional, and each of *a* and *NOT-a* are excluded as possible implied conditions for *b*. The most acceptable interpretation is an unconditional statement: *a* AND₂ *NOT-a* are excluded as conditions for *b*. Professor Allen calls the >whether or not= provision the >outlaw= clause, and says:- >*Insofar as it is possible to do so, including an outlaw clause rules out the likelihood that the conditions Δoutlawed@ by it will be decided to be implied conditions for the rest of the norm.*= (L.E. Allen *Towards a Normalized Language to Clarify the Structure of Legal Discourse* Paper presented at International Conference on Logic, Informatics, Law at Florence, Italy, 6-10 April 1981, in A.A. Martino, A.A. (ed.) *Deontic Logic, Computational Linguistics and Legal Information Systems: Edited Versions of Selected Papers from the International Conference on "Logic, Informatics, Law" Florence, Italy, April 1981* North-Holland Publishing Company, Amsterdam, The Netherlands, 1982, 349, at 396.)

¹⁴⁸Logical truth tables provide an effective method to determine the validity or invalidity of an argument. The concept is discussed in most texts on symbolic logic, such as I.M. Copi *Symbolic Logic* 5th ed. Macmillan Publishing Company Inc., New York, USA, 1979.

¹⁴⁹See I.M. Copi & A. Cohen *Introduction to Logic* 10th ed. Prentice-Hall Inc., New Jersey, USA, 1998, at 385.

¹⁵⁰The logical convention is that 'NOT' qualifies only the proposition which follows the connector 'NOT'. 'NOT *a* OR *b*' is interpreted as 'either [the denial of *a*] OR *b*'. If both propositions (that is, each of *a* AND *b*) are intended to be denied in that form of proposition, then the rules of logic require brackets to be used, that is, >NOT [*a* OR *b*']. Sometimes the proposition is written using a hyphen as 'NOT-[*a* OR *b*]'.

¹⁵¹R. E. Keeton *Statutory Analogy, Purpose and Policy in Legal Reasoning: Live Lobsters and a Tiger Cub in the Park* (1993) 52 Mod. L. Rev 1192, at 1204-1205.

¹⁵²The inherent deficiencies of language will also mean that documents will continue to be imprecise: S. Klopfer *Ambiguity and Vagueness in the Criminal Law: an Analysis of Types* (1984-85) 27 Crim. L.Q. 94.

¹⁵³IF ... THEN is not material implication.

¹⁵⁴Transportation.

¹⁵⁵De Morgan's Rules.

¹⁵⁶Simplification.