## Electronic bills of lading, blockchains and smart contracts

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## Keywords

Blockchain, communications, e-commerce, electronic bills of lading, electronic payment systems, international trade, smart contracts.

## Abstract

After a lengthy incubation period, electronic bills of lading (eBLs) are at last taking their first tentative steps in the shipping world. Systems currently in operation, however, are closed; only traders, carriers and banks who are members can participate. These closed schemes are not, therefore, true replacements for traditional paper bills of lading (pBLs), which can be used by anyone. Open eBL implementations are very difficult, which is no doubt why practical schemes so far have been closed.

 While blockchains and smart contracts make no difference to what is possible, they do to what is practicable. In particular, they may render feasible eBL implementations more open than those that have existed until now. They can obviate the need for distrusted central registries, and resolve the digital islands problem which can plague closed schemes.

 This article considers how an open eBL implementation might work. The schemes suggested here are rendered practicable by the new technology, should the industry choose to go down the eBL route. It may not so choose, at any rate in the short term, but if it does take this route, the article examines the legal obstacles that would need to be overcome. It assumes no change in the existing law, but concludes with a discussion of what lawmakers should consider, were they minded to assist.

# INTRODUCTION

The paper bill of lading (pBL) is used ubiquitously in international sales of goods, where carriage is by sea, and in the finance of those sales.[[1]](#footnote-2) It is a document of title, representing the goods while they are at sea, and accords rights to, and sometimes imposes liabilities on, the current holder, whether or not that holder is the original shipper.

 The use of paper has long been unsatisfactory, but development of an electronic alternative has been painfully slow. The main problems with paper have arisen from the ship reaching the port of discharge before the pBL,[[2]](#footnote-3) The abortive SeaDocs scheme, which (to counter this problem) involved a partial dematerialisation of the bill of lading, was set up as long ago as 1983.[[3]](#footnote-4) Bolero, an electronic alternative to the pBL, was devised as a concept over 20 years ago.[[4]](#footnote-5) Yet even today, carriage under an eBL, especially in the bulk trade, is rare.[[5]](#footnote-6) A recent Clyde & Co study lamented that:[[6]](#footnote-7)

As far back as 1990 the Comité Maritime international (CMI) published Rules on Electronic Bills of Lading. In 2008 the United Nations adopted a new convention on carriage of goods by sea (the Rotterdam Rules), which allows for the use of eB/Ls.

Though the problems have therefore been appreciated for 35 years or more,[[7]](#footnote-8) only now are viable schemes at last coming to fruition. The Clyde study laconically observes that 'progress has been slow'.

 Before this year, three schemes to replace bills of lading with electronic equivalents had been approved by the International Group of P&I Clubs.[[8]](#footnote-9) They replicate contractually the rights and obligations granted to, and imposed upon holders of traditional pBLs. The traditional bill of lading can be used as proof of title, so the schemes also maintain a record of entitlement, and allow transfers to be made by current title holders.[[9]](#footnote-10) In 2019, a fourth scheme was approved, which is, as the International Group of P&I Clubs observe, 'the first approved system to use Blockchain technology'.[[10]](#footnote-11) Publicly available information does not make clear precisely how the blockchain is used,[[11]](#footnote-12) nor the particular variety of blockchain, but how a blockchain might help in principle is discussed later in this article.[[12]](#footnote-13)

 The current schemes operate on the basis of the existing law, without the need for any new legislation.[[13]](#footnote-14) The assumption that it is for the commercial parties, rather than the legislators, to make appropriate provision, is also the assumption made in this article, though I conclude with a consideration of whether (and if so, what) legislative changes might be desirable.[[14]](#footnote-15) Of course legislation could assist in the implementation of eBLs, but commercial parties should not (and currently do not) assume that this will happen.

 The schemes currently operating are closed to members,[[15]](#footnote-16) but the traditional pBL can be used by anyone, without the need to join a group. A true replacement for the traditional pBL would therefore be open. It has been much easier until now to replicate the pBL electronically in a closed scheme, but blockchains and smart contracts should make easier what has been difficult until now.

 This article therefore considers two possible models for open eBL implementations, and at the legal difficulties that need to be overcome to achieve them.[[16]](#footnote-17) First, however, is an examination of aspects of the traditional bill of lading to which particular attention needs to be paid.

# THE TRADITIONAL BILL OF LADING

If an eBL is to replicate (by contract) the functions of a pBL, it is necessary to determine what those functions are. It is not intended here comprehensively to analyse what a bill of lading does,[[17]](#footnote-18) but rather to show where the problems lie. Where the law is unsettled or controversial, it is assumed (in the absence of legislation) that the parties should guard against the view least beneficial to the development of electronic bills of lading.[[18]](#footnote-19) Legal uncertainty is not resolved here therefore.

 In outline, the main points sought to be made in this section are these. The bill of lading became recognised as a document of title to goods at sea. Because goods while at sea could not be physically traded, the bill of lading, which was originally just a receipt for the goods, was traded instead. It came to represent the goods, so that its transfer could also transfer property in the goods, and the right to take possession of the goods when the ship arrived at her destination.[[19]](#footnote-20) The pBL came later, by statute, to transfer rights and liabilities under the carriage contract, in case the goods were lost or damaged at sea, or misdelivered. The idea was that, on the arrival of the ship, the bill of lading holder would present it to the master, to establish the right to take possession of the goods to which it related. Obviously, this system works well, only if the bill of lading can reach the port of discharge before the ship.

 Today, this central assumption often no longer holds. The increased speed of ships. and delays to the documents, have led to the ship frequently arriving first.[[20]](#footnote-21) One of the main motivations for the development of electronic bills of lading has been to avoid this problem.

 However, the electronic bill must perform all of the functions currently performed by the paper bill. It must establish the right of its holder to take possession of the goods. It must transfer rights and (where appropriate) liabilities under the carriage contract. It must be capable of transferring property, and the right to possess the goods. Crucially also though, if the carrier delivers goods against presentation, or if he refuses to deliver except against presentation, he should be protected from action, just as he is with a paper bill. Carrier defences are problematic for an eBL, because the actions can be in tort or bailment, and are not limited to contract. A carriage contract can provide defences against tort and breach of bailment actions, but only if there is a contractual relationship between claimant and defendant.[[21]](#footnote-22)

 A document of title proves entitlement, but also, crucially, that nobody else is entitled. It needs to be unique. This is difficult in an electronic context, where documents can be freely copied. This is why a title register, or its functional equivalent, needs to be kept, apart from the document itself. It is possible to store (for example) chains of indorsements within an electronic document itself, but that does nothing to guard against illegitimate copies being made, enabling a fraudulent trader to resell the same cargo more than once. A secure ledger is also necessary, to prevent multiple copies being made and negotiated separately.[[22]](#footnote-23)

 It is much easier to replicate these functions in a closed than in an open system, but the pBL can be used by anyone, and if the eBL is truly to replicate the pBL, it needs to enjoy similar freedom of use. That implies an open, rather than a closed scheme.

 Open schemes are more difficult than closed, but this article puts forward two potential models, each of which could work, at least in principle, assisted by recent technological developments. For example, a closed system can easily keep a record of current entitlement, but a blockchain can perform the same function in an open system. The article also examines the legal issues that would need to be resolved. It concludes that they are resolvable, even in the absence of legislation providing for eBLs.

 So first, the role of the pBL is described, briefly but sufficiently to signal what needs to be provided for, and what needs to be avoided, in an open scheme. The description then shifts to how current closed systems deal with the issues. Contrasting with that, two open system models are proposed and analysed. Finally, there is a short discussion on legislative requirements, in the event that legislation *is* adopted, facilitating use of eBLs.

## Bill of lading as document of title

The most important functions of the bill of lading, for the purposes of this article, are that it is a document of title to goods, and that its possession accords the holder contractual and other rights, and sometimes imposes upon him contractual liabilities. Both need to be provided for (contractually) by any electronic document replacing it.

 Though the bill of lading has been used since medieval times,[[23]](#footnote-24) its development into its modern form, and its recognition by the courts as a document of title, was not complete until late in the nineteenth century.[[24]](#footnote-25) Because ocean voyages could take weeks or months, and once on board ship, it was not possible for traders to deliver goods directly, trades were made of the bill of lading instead, which came eventually to represent the goods. Traders could use the pBL to pledge or deliver goods, and its retention by sellers could provide security for payment. The culmination of this process was the development of the CIF contract and (a little later) the bankers' documentary credit, for both of which the bill of lading is ideally adapted.[[25]](#footnote-26) The courts recognised the custom of merchants, and at any rate the shipped negotiable bill of lading came to be regarded be a symbol for the goods,[[26]](#footnote-27) enabling trading in it to be regarded as equivalent to trading in the goods. That remains the role of the bill of lading, where it is used in its traditional manner.[[27]](#footnote-28) It is necessary to consider the following aspects of this role:

(i) presentation of the bill of lading allows a consignee or holder to take delivery of the goods when the ship arrives, but conversely, the master is entitled to refuse to deliver except against its presentation, and the carrier is also protected from suit if he delivers against presentation of an original bill; note the importance of the carrier defences, which are difficult to replicate in an electronic environment;

(ii) transfer of the bill of lading will often transfer property in the goods, and conversely, its retention (eg, by an unpaid seller) will allow the seller to retain property;

(iii) possession of the bill of lading is regarded as possession of the goods; one consequence of this is that pledging the bill of lading is equivalent to pledging the goods themselves, whether or not there is an attornment by the carrier (as bailee of the goods).

It is also necessary to be aware of a separate (legislative) development, transferring rights under the carriage contract to successive holders, and sometimes to impose liabilities upon them.

 All of these aspects need to be replicated in any electronic document that replaces the pBL. In the absence of legislation, it is extremely unlikely that the courts will recognise an electronic bill of lading as a common law document of title,[[28]](#footnote-29) and it follows that these functions need to be provided for explicitly.

### (i) presentation of the bill of lading allows a consignee or holder to take delivery of the goods when the ship arrives

A holder of a negotiable bill of lading is entitled to take delivery of the goods on its presentation. If the carrier cannot deliver, or refuses to make delivery, or has delivered to somebody else, he will be liable in principle for the full value of the goods.[[29]](#footnote-30) Liability can be in contract and conversion,[[30]](#footnote-31) and in principle, there can also be liability for breach of bailment.[[31]](#footnote-32) Any electronic scheme would make contractual provision for delivery, and there would be liability for misdelivery in the event of a breach.

 It is important to recognise the converse situation, however. First, a carrier is protected from suit, should he deliver against production of an original bill, even if the true owner of the goods is holder of one of the other originals.[[32]](#footnote-33) He need not make extensive enquiries as to the true title. Secondly, where an order bill of lading is issued, then (in the absence of contractual terms to the contrary) a master is entitled to refuse to deliver, except against its production.[[33]](#footnote-34) He must be protected from suit, should he so refuse.

 It is therefore vital for the operation of any bill of lading, or equivalent electronic document, that the carrier is accorded the appropriate defences. This is not a problem with paper bills. The common law almost certainly recognises that for the carrier to deliver against an original document of title, or to refuse to deliver otherwise, is not wrongful, and hence attracts liability in neither conversion nor bailment.[[34]](#footnote-35) As far as contract is concerned, the matter is resolved by implication of the necessary terms.[[35]](#footnote-36) This reasoning, however, applies only to a document that is regarded as a document of title at common law. It does not apply to an eBL.[[36]](#footnote-37)

 Provision of appropriate carrier defences is problematic for an eBL, particularly with an open system, principally because there can be liability, for both misdelivery and non-delivery, in conversion and bailment, as well as in contract. The problem is that the person with title to sue will not necessarily be the holder of the bill of lading, and need not have a contract with the carrier. There can be a contractual defence to a conversion action only if there is a contract between the claimant and the carrier. Any open eBL system will need to ensure this, either by providing the necessary contract, or by limiting the range of potential claimants.[[37]](#footnote-38) Part of the strategy with an open eBL would be to ensure that the property in the goods always vests in the holder, and that there is a contract between carrier and holder.[[38]](#footnote-39)

### (ii) transfer of the bill of lading can transfer property in the goods

It was accepted as long ago as *Lickbarrow v Mason*,[[39]](#footnote-40) in the eighteenth century, that a transfer of the bill of lading can, by custom of merchants, also transfer the property in the goods, but the House of Lords has since held that this is not automatic, and depends on the parties' intention.[[40]](#footnote-41) Nonetheless, the normal inference, particularly in a CIF contract, is that property passes on tender of the bill of lading against payment,[[41]](#footnote-42) and where the bill of lading is taken to sellers' order, there is a statutory presumption (in s 19(2) of the Sale of Goods Act 1979) providing effectively for this result. Where the presumption applies, retention of the bill of lading by the seller can protect him against the buyer's insolvency.[[42]](#footnote-43) Conversely, the buyer who pays, by obtaining the bill, as holder, not only becomes exclusively entitled to take delivery on presentation, but also obtains property against payment, a matter of obvious importance if the seller later goes into liquidation.[[43]](#footnote-44)

 Even if sale contracts are amended only to allow tender of electronic, rather than paper bills of lading, otherwise continuing as at present,[[44]](#footnote-45) the applicable principles for passing of property, even for CIF contracts, probably transpose directly into an electronic context. They are common law principles, based on the intention of the parties, and to the extent that they are affected by ss 16-18, and 20 of the Sale of Goods Act 1979, these provisions do not refer to any particular documentation. The presumption in s 19(2) applies only to paper bills of lading, where the bill of lading is taken to sellers' order, but it is a codification of the common law.[[45]](#footnote-46) It follows that, where an electronic bill of lading performs the same function as its paper equivalent, principles as to the passing of property will probably be the same.[[46]](#footnote-47) Cases on the passing of property, even for pBLs, are far from clear, however,[[47]](#footnote-48) and since sale contracts will need to be re-drafted anyway, it makes sense to make explicit property provision in any eBL scheme. To, to ensure proper protection for carriers, it is desirable that property should always be with the holder of the eBL.[[48]](#footnote-49)

### (iii) possession of the bill of lading is regarded as possession of the goods

As already observed, by the late nineteenth century, the courts had accepted that, by custom of merchants, the bill of lading had become a document of title representing the goods. A person in possession of the bill, as lawful holder, also came to be regarded as being in 'symbolic' possession of the goods themselves.[[49]](#footnote-50) One consequence of this today is that delivery of a bill of lading can effect a pledge of goods at sea, even in the absence of attornment by the carrier, as bailee of the goods.[[50]](#footnote-51) The pledgee needs to obtain possession, but symbolic possession suffices. Usually, when goods are in the keeping of a third party, a change in possession requires the third party (here the carrier as bailee) to attorn, but in *Official Assignees of Madras v Mercantile Bank of India*, Lord Wright observed that the bill of lading is the one exception to this rule.[[51]](#footnote-52)

 There is no similar custom of merchants for electronic bills of lading, and the parties must therefore provide for attornment, or something equivalent, if electronic bills of lading are to be used to effect pledges, for example in documentary credits. While the law is arguably less clear than stated here,[[52]](#footnote-53) the parties providing for electronic bills of lading cannot take the risk.

## Transfer of contractual rights and liabilities

In international sale contracts, whether on CIF or FOB terms, risk passes on shipment,[[53]](#footnote-54) so that if loss or damage occurs on the voyage, or if the cargo is misdelivered, it is the buyer, not the seller, who suffers the consequences. With chain sales, it is, accordingly, the final purchaser in the chain who bears the loss. If the loss has been occasioned by a breach of the carriage contract, it is therefore not the usually the shipper who has an interest in suing the carrier, but only the shipper has entered into an express carriage contract.[[54]](#footnote-55)

 Risk also passes on shipment for FOB sales, and if the FOB contract is of the variety where the seller ships as principal,[[55]](#footnote-56) the problem is the same as for CIF contracts.

 Carriage contracts accord carriers defences, time bars and liability limits, and if an action is brought against him in tort or for breach of bailment,[[56]](#footnote-57) the carrier will wish to have a contract with the claimant, in order to invoke against him those defences, time bars and liability limits. Carriers may also wish to assert claims against receivers, for example for freight, or demurrage incurred at discharge. For all these reasons it is desirable that the bill of lading holder can enjoy carriage contract rights, so that the delivery (and other contractual) provisions are enforceable by the current holder. It is also desirable that he can, where appropriate, become liable under the carriage contract. But an express carriage contract is made only with the original shipper.

 The courts did not develop the document of title concept to its logical conclusion, and the common law did not, on transfer of the bill of lading, also transfer rights and liabilities under the contract of carriage.[[57]](#footnote-58) This was, however, later done by statute, originally by the Bills of Lading Act 1855, s 1, and currently the Carriage of Goods by Sea Act 1992.[[58]](#footnote-59) The 1992 Act clearly does not, however, apply to electronic bills of lading,[[59]](#footnote-60) and so appropriate provision must be made.

 On the terms of the bill of lading contract, the conventional view is that whereas the bill of lading merely evidences the carriage contract between carrier and shipper, where the carriage contract is transferred under the statute, the bill of lading *is* the carriage contract, as between the new parties.[[60]](#footnote-61) Any eBL scheme will have to make whatever provision is thought appropriate. Bolero, for example, provides that the contract should be 'either:

(a) on the terms of the contract of carriage as contained in or evidenced by the BBL Text; or

(b) when the Shipper is a Head Charterer, on the terms set out or incorporated in the BBL Text, as if this had contained or evidenced the original contract of carriage.'[[61]](#footnote-62)

This is essentially the same as the conventional position under the general law. Note that Bolero allows incorporation of terms from another document (eg a charterparty).

## Carrier protection and defences

The holder is entitled to take delivery, but only on presentation of the document to the master; carriers are therefore entitled to refuse to make delivery, except against presentation of an original bill.[[62]](#footnote-63) It is said that this benefits carriers, because the bill of lading identifies the person entitled to the goods, and shows the master to whom he may safely deliver.[[63]](#footnote-64) Carriers are also protected from suit, should they make delivery against presentation.[[64]](#footnote-65) This saves them the trouble of making extensive enquiries as to the true ownership of the goods.

 For carriers to enjoy these benefits, they must be protected from action by the cargo-owner, should they refuse to deliver except against presentation, or if they deliver against presentation. The cargo-owner might, in principle, have an action not only in contract, but also in conversion and breach of bailment. Problems arise where the cargo-owner can sue, but where there is no contractual relationship between cargo-owner and carrier, because in that event the carrier cannot rely on contractual defences.[[65]](#footnote-66)

 Bailment is less problematic in this regard than conversion, because there should be a contract between bailor and carrier. For an order bill of lading, an action can usually be brought only by the original shipper as bailor,[[66]](#footnote-67) unless there is an actual attornment.[[67]](#footnote-68) The shipper will necessarily have a contract with the carrier, and if there is an actual attornment, it can be on terms that modify the carrier's duties as bailee, and provide appropriate defences.

 Where the bill of lading is made out in favour of a named consignee, Lord Hobhouse in *The Berge Sisar* thought that the consignee might be the bailor,[[68]](#footnote-69) but then the contracting party would also be the consignee.[[69]](#footnote-70) The starting point is Brandon J's three-fold categorisation in *The Albazero*.[[70]](#footnote-71) This describes who is the contracting party, but it was translated directly into a bailment context by Mance LJ in *East West Corpn v DKBS AF 1912 A/S*.[[71]](#footnote-72) If this translation is correct, then whether the bailor is shipper or consignee, he should have a contract with the carrier, in which case the terms of the bailment can be modified by the contract, and the carrier accorded the necessary defences.[[72]](#footnote-73) It is also arguable that the terms of the original bailment bind a later cargo-owner, whether or not he is party to a contract with the carrier.[[73]](#footnote-74)

 Nonetheless, since there is potential doubt, any eBL scheme should ensure that consignor and consignee are both contracting parties, if possible.

 Conversion is more difficult. It protects possession rights, which usually go with property.[[74]](#footnote-75) The cargo-owner with property will not always have a contract with the carrier, making it impossible for the carrier to assert contractual defences against him. For the pBL, the common law provides the carrier with defences to conversion actions, whether or not he has a contract with the cargo-owner.[[75]](#footnote-76) However, these defences to conversion actions almost certainly apply only to paper bills of lading (as documents of title),[[76]](#footnote-77) and must therefore be provided for explicitly with electronic bills. It follows that though electronic bills will usually put in place a contractual regime, they need also to take account of actions in tort or bailment, bearing in mind that the cargo interest need not necessarily have a contract with the carrier.[[77]](#footnote-78)

 For closed systems this should not be a problem, because all parties are always in privity of contract with all others.[[78]](#footnote-79) A closed system can also require shippers and holders not to sue other than in contract, in which case the carrier can enjoy contractual protection. An open system cannot do this, and ideally, the sale contracts need to provide that the property is always vested in the holder, to avoid the conversion problem alluded to here.[[79]](#footnote-80)

 Specific provisions also need to be made, with an electronic bill, to identify the holder at delivery, since unlike with a paper bill, there is no original physical document that can be produced.[[80]](#footnote-81)

## What about other documents?

The question is whether any of the above discussion applies beyond the traditional shipped bill of lading, and in particular, whether it might apply to an electronic bill. If it did, then that would greatly ease the path towards development of open eBLs. However, I conclude here electronic bills of lading are almost certainly not covered by any of the above, and even if there were doubt, nobody developing a scheme should assume any application to eBLs.

 The Carriage of Goods Act 1992, which transfers contractual rights and liabilities, stipulates the documents to which it applies.[[81]](#footnote-82) Its application to electronic bills depends on the Secretary of State triggering s 1(5),[[82]](#footnote-83) and this has not happened. The 1992 Act does not apply to eBLs, therefore, and any scheme for eBLs must itself make equivalent provision.

 As for the substance of the carriage contract, under English law, the liability regime provided for by the Hague-Visby Rules applies compulsorily where 'the contract expressly or by implication provides for the issue of a bill of lading or any similar document of title'.[[83]](#footnote-84) It has been argued that this wording is of sufficient width to include an eBL.[[84]](#footnote-85) The position under the Hague-Visby regime was examined by the House of Lords in *The Rafaela S* (an authority used in support of this argument),[[85]](#footnote-86) which held that a straight bill of lading was a bill of lading or similar document of title, therefore triggering application of the Rules. The bill of lading there expressly provided for delivery only against surrender of an original.[[86]](#footnote-87) The parties can make equivalent provision in any document, and it would be necessary to do so for an electronic bill of lading.[[87]](#footnote-88) If so, and if the electronic document is also called a bill of lading, as was the document in *The Rafaela S*, it is at least arguable that it is satisfies the definition of a document of title within the Hague-Visby Rules. Conversely, however, it might be argued that at least current forms of eBL do not work like documents of title at all.[[88]](#footnote-89) Even if the argument (that an eBL can be a document of title for this purpose) is correct, it is necessary to define minimum requirements for an eBL to come within the Rules.[[89]](#footnote-90) At any rate, an eBL cannot safely be assumed to come within the Hague-Visby Rules, so nobody developing a scheme should assume their application to eBLs. It would be preferable for carriage contracts, where electronic bills are used, to incorporate the Hague-Visby Rules expressly (as is often done now, anyway, for paper bills).[[90]](#footnote-91)

 All the other features of the bill of lading discussed above depend on it being a document of title at common law. It may be that only the document of title recognised at common law is the shipped negotiable bill of lading, but it is possible that straight bills of lading and received for shipment bills are also accorded this status.[[91]](#footnote-92) Any scheme for electronic documentation will need to make its own decision as to the position of electronic versions of these documents, and also for ship's delivery orders.

 A document can become a document of title by custom of merchants.[[92]](#footnote-93) It is inconceivable that any such custom is recognised for an electronic version of any document.[[93]](#footnote-94) It follows that the parties must make express provision, for what the law provides, more or less automatically (because it is a document of title), for the traditional shipped bill of lading.[[94]](#footnote-95)

## Bill of lading as receipt

The bill of lading is a receipt for the goods, signed by the master. It contains a description of the goods, their apparent condition, and a statement that they have been shipped, or received for shipment. Where bills of lading are traded, the information certified by the master's signature can be relied upon by a purchaser paying for the goods, since he cannot inspect the goods themselves before making payment, or by a bank advancing money on their security. If any of the statements is wrong, and a purchaser or bank suffers loss in consequence, there is a liability regime.[[95]](#footnote-96) This must be provided by any replacement to the traditional bill of lading.

 In an electronic context, it is important that a purchaser or bank can be confident that the signature is that of the master, and that the document signed has not been subsequently altered. This can be achieved, even in an open system, with a digital signature, typically using a public and private key infrastructure (PKI).[[96]](#footnote-97)

 As for the liability regime, for pBLs, in outline, the carrier is estopped from denying the truth of the statements in the bill of lading, for example as to the description and apparent condition of the goods, date of shipment, and so on, where the statements made have been relied on by the person taking up the bill. This will generally, but not always, lead to liability under the carriage contract, because the carrier cannot deny that the goods, when loaded, were as stipulated in the bill.[[97]](#footnote-98) The existing regime for paper bills is not perfect, and it would be sensible to provide for a better (contractual) regime, for electronic bills.

 Paper bills are bedevilled by the anomalous and unsatisfactory decision in *Grant v Norway*.[[98]](#footnote-99) The decision, that the master has no authority to bind the shipowner in respect of statements in the bill of lading on goods not loaded on board, effectively protected carriers from liability where no goods were loaded,[[99]](#footnote-100) or fewer goods were loaded than stated in the bill. Conclusive evidence presumptions were introduced in the Carriage of Goods by Sea Act 1971 and its namesake of 1992, which included provisions intended to reverse *Grant v Norway*. As stated above, it is arguable (but no more than arguable) that the 1971 Act could apply to an eBL, but the 1992 Act definitely does not.[[100]](#footnote-101) However, this probably does not matter overly, because *Grant v Norway* itself was based on the master’s authority to issue bills of lading being defined by the usage of trade and the known general practice of shipmasters. The rationale of the case should probably not apply to electronic bills today, especially as the courts have shown no inclination to extend *Grant v Norway* beyond its facts.[[101]](#footnote-102) It is therefore of little consequence that the 1971 Act probably, and 1992 Act definitely, do not apply to eBLs.[[102]](#footnote-103) Nonetheless, since the matter cannot be stated beyond doubt, it would make sense for eBLs contractually to provide for carrier liability for incorrect quantity statements, save where the master qualifies the statement, by a clause such as 'weight and quantity unknown'.

## Considerations for electronic replacements

What the law does more or less automatically for the paper bill of lading, its document of title status being based on the custom of merchants, it does not do for an electronic document.[[103]](#footnote-104) All of the features discussed here can be replicated by an *explicit* contractual scheme, and this is how the existing schemes work. However, these closed contractual regimes rely heavily on a central registry, in which traders and carriers may be unwilling to repose trust.[[104]](#footnote-105)

# WHY REPLACE PAPER BILLS OF LADING?

The main impetus for developing the eBL is the pBL's frequent arrival only after the ship is ready to discharge. There are also, however, arguments for replacing paper with electronic documentation generally, and of course these arguments also apply to bills of lading.

## Bill of lading as document of title

As already observed, in the period during which the bill of lading was developing as a modern document of title, ocean trade was slow.[[105]](#footnote-106) It may be supposed that documents could usually move faster, perhaps overland, enabling the bill of lading to reach the eventual receiver of the cargo before the ship and goods arrived. At any rate, it must have been assumed that the bill of lading would arrive first, given that it had to be presented for delivery to be made.[[106]](#footnote-107)

 Whether or not that was the case in the nineteenth century, the same assumption cannot be made today. Particularly on some container routes, fast ships on relatively short voyages often arrive before the documents, even in the simplest transactions, where there are no resales.[[107]](#footnote-108) Where the cargo is sold many times on the voyage, as commonly occurs with commodities, the documents can take weeks to catch up.[[108]](#footnote-109) In either case, the carrier is faced with the choice of delaying delivery until the bill of lading arrives, the charterers incurring demurrage liability and the shipowners loss of freight-earning potential,[[109]](#footnote-110) or risking delivery without production. In the latter case, the consequences of getting it wrong are serious.[[110]](#footnote-111) Where there are no resales, a non-negotiable waybill may suffice,[[111]](#footnote-112) Where there are resales, however, a negotiable document is required. In the absence of an electronic equivalent, parties are forced to adopt the unsatisfactory practice of delivering without production against indemnities, a practice which denies the bill of lading its document of title functions.[[112]](#footnote-113)

## Other considerations

There are considerations other than those stemming from the need to present the document at delivery. Paper bills are inconvenient, expensive and insecure.[[113]](#footnote-114) Thus:[[114]](#footnote-115)

The cost of issuing and managing paper BLs, LOIs and other paper documentation is estimated to be upwards of 15% of the physical transportation costs. When eBLs are used, the requirement for LOIs is reduced by some 90%. ...

Paper BLs are easily forged, stolen or lost. Again, when a paper BL has gone missing, the carrier often agrees to deliver the cargo against a LOI or a Bank Guarantee. ...

In respect of the pBL's insecurity, essDOCS Co-Founder Goulandris observes that:[[115]](#footnote-116)

My experience is that plenty of people can create a fake paper bill of lading; with a good photocopier or printer, they could probably do it in 30 minutes. It takes someone far more sophisticated to create an electronic fake – so, when it comes to comparing the two, paper is far less secure.

## Integration with other transactions

Shipment and carriage are normally part of a wider transaction involving supply chains on the shipment side, and ultimately consumers on the delivery side. Blockchains and smart contracts can help to integrate the entire process, and to some extent automate it, with considerable savings in cost and speed. The full potential of this integration cannot be realised as long as paper bills of lading continue to be used for the middle part of the transaction.

## Existing law presumed

As already observed,[[116]](#footnote-117) this article assumes the law remains as it is today. In particular, neither the Carriage of Goods Act 1971, nor its namesake of 1992, apply to electronic bills of lading,[[117]](#footnote-118) and the Rotterdam Rules (which could help) are not in force.[[118]](#footnote-119) However, for precisely the same reasons that the Carriage of Goods Act 1992 does not apply to electronic bills of lading, the Contracts (Rights of Third Parties) Act 1999 does.[[119]](#footnote-120) It is assumed that those parts of the Sale of Goods Act 1979 that refer to bills of lading, do not apply to their electronic equivalent.[[120]](#footnote-121)

# HOW TO REPLACE THE BILL OF LADING

There are three main areas to consider, when replacing a bill of lading with an electronic document:

* the evidential function (description and apparent condition of the goods when loaded, that they have been loaded, and date of shipment);
* proof of title;
* transfer of rights and obligations as the bill of lading is itself transferred.

The evidential function requires the bill of lading to be digitally signed, to ensure that the statements therein really did emanate from the master.[[121]](#footnote-122) It also requires a liability regime (as already discussed).[[122]](#footnote-123)

 That possession of the document provides proof of title is what distinguishes the bill of lading from the waybill, for which it has long been considered far easier to provide an electronic replacement.[[123]](#footnote-124) It must also *uniquely* identify the person entitled. Thus, for example, scanning a paper bill as a PDF file, and emailing it down the chain, is clearly not satisfactory,[[124]](#footnote-125) as there is no control over the number of copies that can be made, and previous holders in the chain will also retain a copy. For the same reason, emailing a PIN code (which could be used to take delivery) down the chain would be a most unsatisfactory way to trade.[[125]](#footnote-126) Certainly, it would enable a purchaser to take delivery, but he would not be the only person to know the PIN, and would not therefore obtain good security. A reliable electronic record of all transfers, or of current title, needs to be maintained to ensure uniqueness.[[126]](#footnote-127) Fortunately, this is not as difficult as has sometimes been assumed.

 A curious feature of paper bills is that they are usually issued in a set of three originals, allowing an unscrupulous trader to sell or pledge the same cargo to three different purchasers or pledgees.[[127]](#footnote-128) Arguably, with an existing system so fundamentally flawed, the bar should not be set too high for its electronic replacement. On the other hand, at least a purchaser or pledgee can protect himself by demanding all three pBL originals (thereby completely negating the value, if indeed there is a value, in issuing three in the first place); no similar protection is possible with a PDF file or a PIN code, since there would be no way to know how many copies existed.

# CURRENT SCHEMES

It is not intended here to make a detailed review. Rather, the aim is to explain features of the existing schemes that would need to be replicated in any open system.

 Of the four schemes to replace bills of lading with electronic equivalents, approved by the International Group of P&I Clubs,[[128]](#footnote-129) only Bolero has made public full details of its operation.[[129]](#footnote-130) Such material as is public, however, suggests that all run on essentially similar principles, and that all share essentially the same strengths and weaknesses. Discussion here will centre on Bolero, because more information is (or at least was) available.[[130]](#footnote-131)

 Bolero relies on all parties, whether traders, banks or carriers, belonging to the scheme, to ensure that everyone has a contract with everyone else.[[131]](#footnote-132) For example, Bolero's Rulebook provides that it

... constitutes an agreement between Users, and between each User and the Bolero Association acting on its own behalf, and on behalf of all other Users from time to time, and, where necessary, on behalf of Bolero International.[[132]](#footnote-133)

All carriers and merchants are members, and the Rulebook thus establishes a contractual nexus between each member and every other member. This enables all privity of contract problems to be avoided. Carriers can be accorded the defences they need to enable a document of title properly to operate,[[133]](#footnote-134) as long as property in the goods always remains within the membership,[[134]](#footnote-135) as it should if Bolero is properly operated.

 Bolero operates a Title Register to keep track of who is currently entitled as holder.[[135]](#footnote-136) A closed system can easily do this,[[136]](#footnote-137) and even if the other schemes do not have a title register explicitly, any electronic system has to maintain a record of entitlement.[[137]](#footnote-138) Bolero replicates electronically the range of bills of lading currently in use,[[138]](#footnote-139) and replicates the Carriage of Goods Act 1992 by what is described as 'novation' of the carriage contract.[[139]](#footnote-140) Though the 1992 Act is not incorporated as such,[[140]](#footnote-141) the way in which documentary entitlements work effectively move rights and liabilities in the same way, whether there is a transfer by sale or pledge.[[141]](#footnote-142) Again, any electronic system must do this. However, though it is described as a novation, it does not have all the features of a conventional novation: 'a novation involves the termination of one contract and the creation of a new one in its place'.[[142]](#footnote-143) However, since the Bolero Rulebook, from the start, establishes a contractual nexus between each member and every other member,[[143]](#footnote-144) all the parties to the transaction are in a contractual relationship with each other throughout. Everything is being done under existing contracts; no new contracts are being formed, nor existing contracts terminated. Another viewpoint is to see the 'novations' as changes to the terms of existing contracts.[[144]](#footnote-145) This is not mere semantics. A consequence is avoidance of the consideration problems for a genuine novation, posed by Malcolm Clarke;[[145]](#footnote-146) each party is simply performing duties under an existing contract (the Rulebook), and there are no difficulties about finding consideration for the Rulebook contracts. Consideration, though not a problem for a closed scheme, could however be a genuine problem for novations in an open system.[[146]](#footnote-147)

 Novations alone cannot resolve all contractual nexus issues. For example, an FOB seller who is not shipper will not become party by novation, and so may never be party to a carriage contract. If he has property he can, in principle, by suing in tort, avoid carriage exceptions and limitations.[[147]](#footnote-148) This is however a problem with paper bills now.[[148]](#footnote-149) and an eBL does not exacerbate the problem. Indeed, a closed eBL system such as Bolero can resolve problems like this, which cannot be resolved using a paper bill, precisely because all parties are bound together by the Rulebook, and it could be a contractual requirement not to sue in tort to avoid carrier defences. If a scheme such as Bolero is operated properly, then, it should be possible to ensure that any cargo-owner suing the carrier is party to a carriage contract, and hence to allow the carrier the benefit of carriage contract exceptions and limits to liability.

 Another advantage of any eBL is that there is no need to issue bills of lading in sets of three originals, so the problems created by *Glyn Mills* and *Sanders v Maclean* should not continue to haunt electronic bills.[[149]](#footnote-150)

 There remains the possibility that the shipper ships a cargo that does not belong to him, or on which there might be prior claims, and Bolero carriers would not be protected from actions by the true owner, at any rate if he was not enrolled in Bolero.[[150]](#footnote-151) However, Bolero certifies the identity of its members, and precautions can be taken to prevent dishonest carriers and traders from being admitted to the association at all.[[151]](#footnote-152)

 Because it is a closed system in which all carriers are 'Users', Bolero International can act as the carrier's agent to 'acknowledge that the Carrier holds the goods to the order of any [designated holder]',[[152]](#footnote-153) in effect to attorn. Given the contractual rights arising from the 'novation', attornment probably adds nothing useful for a purchaser who also has property. A bank under a documentary credit, however, needs the security afforded to a pledgee, and in the absence of a document of title, attornment effects the delivery necessary to create the pledge.[[153]](#footnote-154) Attornment is another matter that would need to be addressed, were a more open system of electronic bills of lading to be used.[[154]](#footnote-155)

 Delivery of the goods 'shall only be made by the Carrier to, or to the order of, a [holder or consignee] which duly Surrenders the Bolero Bill of Lading'.[[155]](#footnote-156) Precisely how the holder identifies himself, in the absence of a paper bill, is not covered in the Rulebook. The Operating Procedures suggest that 'delivery arrangements ... may have been previously agreed in the Carrier’s terms and conditions'.[[156]](#footnote-157) For any kind of electronic system, some kind of arrangement needs to be made.[[157]](#footnote-158)

 Bolero's Rule 3.10(2) provides that

(2) Nothing in this Rulebook shall be construed as effecting the transfer by the owner of property in the goods which are subject to a contract of carriage contained in or evidenced by a Bolero Bill of Lading or other Transport Document.

Property therefore remains a matter for the sale contracts in the chain. As discussed above,[[158]](#footnote-159) if an eBL performs the same functions as a pBL, passing of property may be unaffected, though the statutory presumption in s 19(2) of the Sale of Goods Act 1979, which in effect transfers property along with the bill of lading, will not apply directly to electronic bills.[[159]](#footnote-160) On the other hand, given that the law cannot be stated with absolute certainty, explicit provision should probably be made.[[160]](#footnote-161) If so, there is much to be said for property passing on payment against the eBL. Certainly, it would be undesirable generally for property to pass to a buyer on shipment, at least with an open system, because if the buyer sued the carrier in tort as cargo-owner before becoming holder, the carrier would not be protected by a novated carriage contract.[[161]](#footnote-162)

 Use of an electronic bill can avoid postal delays, but those are not the only delays with paper bills. They have to be checked, often by two banks for each sale. Under UCP 600, each bank has five days 'to determine if a presentation is complying'.[[162]](#footnote-163) Obviously, these times can mount up with a long chain, even if postal delays are entirely eliminated. An electronic system ought to be able to allow the text of a bill to be made available to everyone in the chain, assuming they are known from the start,[[163]](#footnote-164) in advance of the bill of lading being moved as a document of title, and this could significantly reduce delays.[[164]](#footnote-165) The full potential of electronic bills will not be achieved, however, until document-checking is automated. This will require standardisation of bills, to a far greater extent than at present, and Bolero, essDocs and edoxOnline are working on this.[[165]](#footnote-166)

 It can be seen that an electronic bill can do everything that a paper bill can do, but it is not a common law document of title,[[166]](#footnote-167) and none of the features of a document of title are triggered automatically. Everything has to be explictly provided for, as Bolero does. Replicating contractually the features of a paper bill of lading is easier with in a closed system, such as Bolero, where all trading parties, banks and carriers are in a contractual nexus with each other, and where Bolero can attorn as carrier's agent, than they would be in a system which was open to anybody. Any closed system, however, necessarily puts power in the hands of the operator of the registry, which must also certify the identity of members, and allocate public and private keys for secure encryption of messages. Historically, traders have been put off by the centralised power of registries.[[167]](#footnote-168) Arguably, this problem can be addressed by competing schemes opening up in the future, but it would not be a simple task to pass an eBL from one scheme to another. Whatever kind of bridging scheme might be developed, not all the parties to the transaction would now be in privity of contract with one another (since membership of each scheme would differ). Many of the advantages of closed schemes would be lost in this event.

 Another problem with a closed scheme is where a holder wishes to sell or pledge to someone outside the scheme. Bolero's solution is to allow a switch to paper,[[168]](#footnote-169) which negates the advantages of an eBL. With an open scheme, a switch to paper should never be necessary, except where the infrastructure is not in place to support an eBL.

 Closed schemes such as those described here have been described as 'registry models',[[169]](#footnote-170) and 'as “electronic contracts for carriage”, rather than electronic bills'.[[170]](#footnote-171) The Law Commission has observed that 'Bolero "bills of lading" (are referred to as BBLs because the proprietors of the scheme consider that they are not bills of lading'.[[171]](#footnote-172) They do not move, in the manner of a paper bill, but entitlement changes are instead recorded on a register. It has even been said that 'registry systems mirror more closely the practice of registering cargo aboard ships in the record-keeping parchment books of the eleventh century than modern bills of lading', and that there is therefore 'a real danger that the adoption of the registry model will reverse several centuries of progress'.[[172]](#footnote-173) This seems a little overblown, because in reality, they can perform the same functions as a pBL. It may, however, be another argument for eBLs not being regarded as documents of title for any purpose, at common law or under the Hague-Visby Rules.[[173]](#footnote-174)

 There are advantages, then, in moving to a more open system, but open systems present problems that are easily solved with a closed system. By using blockchains and smart contracts, however, more open, or at any rate decentralised, systems can more easily be created. This article now turns to address how this might be achieved, and also at some of the legal obstacles that need to be tackled to achieve this objective.

# BLOCKCHAIN AND SMART CONTRACTS

The possibility of open schemes has been known for decades,[[174]](#footnote-175) but their practical implementation has been too difficult. A combination of blockchains and smart contracts makes possible nothing that has been impossible until now, but the technology does make practicable what has previously been impracticable. In particular, it should make feasible a greater degree of decentralisation than the current closed schemes permit.

 A blockchain is a method of storing data. There are different varieties of blockchain,[[175]](#footnote-176) depending on the degree to which they are open or public, but any type of blockchain should allow a greater degree of decentralisation than (eg) Bolero's Title Registry. A blockchain's special feature is that each block is securely (cryptographically) linked to each previous block, making it impossible for a fraudster to tamper with a block without also rewriting all subsequent blocks in the chain. Consequently, a blockchain is well-suited to storing chains of transactions, where the validity of a later transaction depends on the validity of those earlier in the chain. It would therefore be well-suited to storing the data in a title (or equivalent) ledger, where the current entitlement depends on the validity of chains of previous transfers. It makes sense for the existing schemes to move towards using blockchains for their current entitement ledgers, even if no other change were made to the way in which they operate.

 The original use of the blockchain was to record BitCoin transactions, a major part of its purpose being to obviate the need for any central body, such as a bank, to validate the data. It is of its essence decentralised,[[176]](#footnote-177) its security depending on the transaction chain being made public; because there are many copies of it, it is less susceptible to alterations by fraudsters.[[177]](#footnote-178) If traders, banks and carriers are not attracted to the idea of an open and public blockchain, permissioned, private and consortium blockchains are also now possible, where access to the blockchain can be restricted (though this requires a degree of trust, and acceptance of a higher risk of fraud).[[178]](#footnote-179) Even with a permissioned private blockchain, the role of the registry can be reduced, so that a central body does not need to be involved in the day-to-day operation, and indeed may choose to make use of a third party blockchain platform.[[179]](#footnote-180) This level of decentralisation alone might help to overcome traders' current distrust of central registries. If not, then the parties might choose a more public form of blockchain.[[180]](#footnote-181) Whichever type of blockchain is eventually adopted by the commercial parties, it can reliably store title and other information,[[181]](#footnote-182) with less central control than with the present closed systems.[[182]](#footnote-183)

 Another recent technology is the 'smart contract', which, it has been said, is neither smart nor a contract.[[183]](#footnote-184) Smart contracts are rather 'computer programmes that automatically enforce themselves (self-execute) without the intervention of a third party when specific conditions are met'.[[184]](#footnote-185) Nick Szabo, who came up with the idea as long ago as 1994, described the smart contact as 'a computerised transaction protocol that executes the terms of a contract'.[[185]](#footnote-186) In other words, smart contracts can greatly facilitate, indeed automate, the *performance* of contracts, but do not replicate contracts, nor displace the need for a contractual regime already to be in place, in the traditional sense. Performance can, however, be triggered by conditions of any desired degree of complexity, as long only as they can be implemented by a computer program. Possibilities are examined more fully in the next section.

 There is no necessary link between blockchains and 'smart contracts', and indeed the idea of the 'smart contract' is a quarter of a century old.[[186]](#footnote-187) Smart contracts are well-suited for use with blockchains, however.[[187]](#footnote-188)

# SOME POSSIBLE MODELS

At common law, rights and liabilities under the carriage contract (including the right of the holder to take delivery) are not transferred with the bill of lading. This has been resolved by statute, but the legislation does not apply to electronic bills of lading.[[188]](#footnote-189) Bolero replicates the action of the statute by what it describes as 'novation', not a problem where the Rulebook provides for everybody involved in the transaction to have a contract with everyone else. Bolero can also act as carrier's agent to attorn to a new holder, allowing a Bolero bill of lading to be used to create a pledge.[[189]](#footnote-190)

 With an open system this would be much more difficult to achieve, but the blockchain's strength is at storing chains, not only of transactions but also of (eg) assignments. Since smart contracts can be of any degree of complexity; payment could, for example, be triggered only against a number of electronic documents.

 Two possible models for an open scheme are considered here. Both are possible without blockchains and smart contracts, but are likely to be practicable only by using them. One is based on successive assignments, and the other on novation. In many respects the novation model is the more satisfactory of the two, principally because it deals so much better with liabilities, but an assignment model is also included because:

. it is arguably easier to implement, because it does not depend on the carrier's co-operation, other than in the initial issue of the bill of lading to the shipper;

. a chain of successive assignments is something which is well-suited for a blockchain to record;

. it was suggested as a solution for a pBL, where the statute in force at the time, did not apply, in a case in the House of Lords.

Both models, I suggest, are workable. Neither is like the existing closed schemes. I do not suggest that either model is likely to be taken up in the short term, but I do suggest that they have advantages over the existing direction in the medium to long term.

## Chain of assignments and indemnities

Assignment was suggested as a solution, at any rate to the transfer of contractual rights, in *The Aliakmon*,[[190]](#footnote-191) so I will briefly describe the issue there. C & F purchasers of a cargo of steel coils, to whom risk had passed, were unsuccessful in bringing an action against the carrier, when the cargo arrived having been damaged on the voyage. The C & F contract had been renegotiated to allow the buyers additional time to pay, but also reserving title to the sellers. A consequence of this was that s 1 of the Bills of Lading Act 1855, the provision then in force for transferring carriage contract rights, did not apply. Moreover, since the buyers, under the renegotiated contract, took delivery of the cargo (of steel) only as agents of the sellers, a new contract between buyer and carrier was not implied under the common law *Brandt v Liverpool* doctrine.[[191]](#footnote-192) The House of Lords held that the buyers were also unable to sue in negligence or in bailment, the former because property had not passed to them at the time of the loss, and the latter because the 'only bailment of the goods was one by the sellers to the shipowners'.[[192]](#footnote-193)

 It followed that the buyers had no title to sue the carriers at all. To the argument that this left a lacuna in the law, Lord Brandon took the view, in effect, that the problem was of the buyers' own making:[[193]](#footnote-194)

'the buyers, if properly advised, should have made it a further term of the variation that the sellers should either exercise this right for their account or assign such right to them to exercise for themselves. If either of these two precautions had been taken, the law would have provided the buyers with a fair and adequate remedy for their loss.'

In other words, where the statutory provisions for transferring contractual rights do not apply (as of course they will not, with an electronic bill of lading), the buyers' taking of an assignment is one way of curing the problem.

 *The Aliakmon* concerned a one-off sale. For a string, there would need to be a chain of assignments, rights under the carriage contract thus being assigned to each successive holder, by his immediate predecessor in the string. In an eBL context, an assignment of contractual rights would be transferred with the electronic bill of lading, both the assignment and the eBL being required to trigger payment. There would be no need for holders to rely on the Carriage of Goods by Sea Act 1992.

 Unfortunately, it takes only a single break in the chain to destroy the efficacy of a chain of assignments. Only by examining the entire chain could a buyer (other than the first buyer in the string) be sure that he was acquiring useful rights. Until now, there has been no practicable way to do this, but blockchain ledgers are very well-suited to storing chains of transactions, and a blockchain could provide secure and tamper-proof evidence of a chain of assignments. Moreover, however long the chain, the smart contract could (by inspecting the blockchain) satisfy itself that it was complete, before triggering payment against tender of an electronic bill. Blockchains and smart contracts, in other words, remove the risks.

 A chain of assignments is easier to operate than successive novations, because it does not involve the co-operation of the carrier (other than in the initial issue of the eBL). There are however, significant problems with it, principally that though the conditional benefit doctrine should ensure that any assignee suing on the contract took subject to carrier defences,[[194]](#footnote-195) liabilities under contracts cannot be assigned. This is why Bolero uses 'novation'.[[195]](#footnote-196) Liabilities can, however, be dealt with by chains of indemnities, with each successive holder indemnifying his immediate predecessor for any liabilities incurred. The blockchain and smart contract could ensure the completeness of the indemnity chain, just as it could with the chain of assignments. The chains of assignments and indemities would be required by the 'smart contract', along with payment, to trigger entitlement to the electronic bill.

 There is, however, the problem that each successive indemnity is only of use if the next person in the chain can be sued, so each seller in the chain takes the risk of his buyer's insolvency. This cannot be guarded against by any electronic means (it is not enough securely to record the chain). For liabilities that are usually relatively small, such as demurrage, this might be acceptable to traders, but perhaps not for potentially large liabilities, such as for shipment of dangerous cargo.[[196]](#footnote-197)

 There are two other concerns with assignments, but they are, I suggest, more apparent than real. First, an assignment can only be of the rights of each successive assignor, which will ultimately trace back to the rights of the original shipper. In *The Aliakmon*, the shippers, as C & F sellers had, under the varied contract, retained property, and would have been entitled to substantial damages had they sued the carrier themselves.[[197]](#footnote-198) They also therefore had a valuable action to assign. More commonly, however, on the transfer of the bill of lading, the seller will retain neither risk nor property in goods, so that a breach of the carriage contract will occasion him no substantive loss. If he is therefore entitled to nominal damages only, he has nothing useful to assign. Section 2(4) of the Carriage of Goods by Sea Act 1992 avoids this problem, by allowing the holder to claim damages as though he were directly a party to the contract with the carrier, but only for paper and not for electronic bills of lading. However, the transferor in this position would seem to come directly within the well-known *Dunlop v Lambert* exception,[[198]](#footnote-199) to be entitled to substantial damages, and hence to have a useful action to assign. If traders were doubtful about this, it would also be possible for the original carriage contract to provide explicitly for the benefit of successors in title, thereby invoking the provisions of the Contracts (Rights of Third Parties) Act 1999.[[199]](#footnote-200)

 The second problem, again more apparent than real, is that s 136(1) of the Law of Property Act 1925 requires of a legal assignment of a carriage contract, 'express notice in writing' to be given to the carrier.[[200]](#footnote-201) Though this might be thought problematic in an eBL context, Art 46 of EIDAS provides that:[[201]](#footnote-202) 'An electronic document shall not be denied legal effect and admissibility as evidence in legal proceedings solely on the grounds that it is in electronic form'. Even if, following Brexit, the UK ceases to give effect to this Regulation, the common law tends to adopt a purposive approach towards formal writing requirements.[[202]](#footnote-203) If the purpose is simply to notify the carrier of the party to whom carriage contract obligations are now owed, an email notice, coupled with the right to inspect a registry or the blockchain, ought to suffice. In any event, conventional written notice could be given when the last assignee took delivery, or sued the carrier if the goods were lost at sea, or wished to enforce a contractual right (such as changing the destination) while the vessel was at sea.

 To sum up, then, a chain of assignments and indemnities (unlike a series of novations) can be set up without the cooperation of the carrier, but a novation deals better with carriage contract liabilities.

## Novation

The other (and arguably preferable) way to deal with the problem is to use the 'smart contract' to ensure that both novation and attornment are set up, even without a closed system such as Bolero. Bearing in mind that smart contract triggers can be as complex as necessary, payment could (if desired) be triggered only against tender of the bill, and an offer of a new contract[[203]](#footnote-204) (and an attornment) by the carrier.[[204]](#footnote-205) The carrier's obligation in this regard would derive from his initial contract with the shipper, and there would need to be a similar obligation in each successive novation. The new holder would be required not only to pay, but also to accept any applicable carriage contract obligations. All this could be set up by smart contracts, which could also build in rejection options, including time limits for their operation, much as Bolero does now.[[205]](#footnote-206)

 A scheme of successive novations is similar in principle to the CMI Rules on Electronic Bills of Lading, published almost 30 years ago.[[206]](#footnote-207) The technology of 1990 did not permit the CMI scheme to become reality; blockchains and smart contracts might enable something similar to work.

## Implications for sale and carriage contracts

New varieties of sale and (for novation at any rate) carriage contracts will be required to make this work, as well as appropriate contracts with banks financing the sales. In this respect, however, the trade is in much the same position as when the CIF contract was developed in the nineteenth century. If a trade practice is clearly desirable, it is likely that it will develop and gain widespread acceptance. That would suffice, in principle, for an open system to operate.

 The discussion assumes that sale contracts would continue to be similar to present-day CIF. If risk did not pass on shipment, neither an assignment nor a novation would be necessary. With modern communication with ships at sea, including perhaps remote inspection of cargoes, some of the rationale for the CIF contract (and in particular the need for risk to pass on shipment) no longer applies, but as long as documentary transactions remain desired, to trade in goods which are still physically at sea for long periods, it is hard to see that the parties could improve on CIF, especially if present-day problems with pBLs are resolved by the use of the eBL.[[207]](#footnote-208)

 These are just two possible models. This article has sought to show the possibilities of replicating Bolero without the need for Bolero itself. Whether the challenge is thought by the trade worthwhile depends on the extent of its distrust of central registries, and on how serious it is about going electronic. I suggest that in the long term, something along these lines is very likely to develop, and that its development will be greatly assisted by the technologies that are beginning now to come into play.

# CHANGES TO THE LAW

The assumption has been made in this article that the law will not be changed to help, and that the parties need to make appropriate provision themselves. If the law were to make eBLs equivalent to pBLs, however, most of the problems discussed here would be resolved at a stroke, and there would be no need for closed schemes such as Bolero, at any rate to resolve the contractual difficulties, and those caused by the eBL not being recognised as a common law document of title.

 There are those who argue that a change in the legal framework is necessary to develop schemes such as these,[[208]](#footnote-209) but the present closed schemes, and my putative models, suggest that this is not true. Of course, legislative assistance would be welcomed, but it probably cannot be relied upon. In a working paper in 2001, the Law Commission observed that:[[209]](#footnote-210)

The absence of an electronic bill of lading, and the existence of adequate legal provision for contractual schemes, mean that there is no immediate need for domestic reform. There may be a need for reform in the longer term if an electronic bill of lading is created.

If this sentiment is widely shared, the eBLs will have to come first, before legislative assistance. It is safer for those creating eBLs to assume this.

 Should legislation be considered desirable, there are a number of models, and the US has made its own provision.[[210]](#footnote-211) The models generally allow for electronic documents to be have the same effect as their paper cousins if they are functionally equivalent. For example, Art 8(a) of the Rotterdam Rules[[211]](#footnote-212) allows 'electronic transport records' to be used in place of conventional transport documents, as long as '[the] issuance, exclusive control, or transfer of an electronic transport record has the same effect as the issuance, possession, or transfer of a transport document'. In other words, Rotterdam adopts a functional equivalence test.[[212]](#footnote-213)

 The problem is, how is functional equivalence to be determined, given that none of the models prescribes a particular technology?[[213]](#footnote-214) The document must provide a similar assurance as to entitlement and exclusivity as a paper document, but unlike its paper cousins, there is a significant range of security that can be offered by an electronic document. While it is obvious that a scanned PDF file, or a traded PIN code, fail the test because they do not provide exclusive control,[[214]](#footnote-215) the precise requirements for functional equivalence are by no means clear. To ensure the authenticity of the document, some kind of encryption is required, but what, and who determines it? Presumably also, requirements will change; encryption that was robust (say) a decade ago will be much weaker, faced with the vastly greater computing power available today. Rotterdam itself only requires (in Art 9) that there are procedures, which 'shall be referred to in the contract particulars and be readily ascertainable', in other words, essentially that the parties determine their own standards; Rotterdam implements party autonomy in determining the level of security that is to be offered. But given that the document is to be accorded a status with significant legal consequences, there is a case for a more objective view of what should be required.

 UNCITRAL's more recent Model Law on Electronic Transferable Records is fuller.[[215]](#footnote-216) Article 7 provides that an 'electronic transferable record shall not be denied legal effect, validity or enforceability on the sole ground that it is in electronic form'.[[216]](#footnote-217) Article 10(b) requires a reliable method:

(i) To identify that electronic record as the electronic transferable record;

(ii) To render that electronic record capable of being subject to control from its creation until it ceases to have any effect or validity; and

(iii) To retain the integrity of that electronic record.

As with the Rotterdam Rules, this is a functional equivalence provision. The meat of UNCITRAL's Model Law is, however, in Art 12, which sets out the general reliability standard. Party autonomy no longer holds the central position that it does in Rotterdam; UNICTRAL expresses a 'desire to provide an objective reliability standard and therefore not to make [it] dependent on party autonomy'.[[217]](#footnote-218) Instead, it sets out various indicia of reliability, which may include (among other things) operational rules and industry standards, but party autonomy is not explicitly mentioned at all. The level of security required for legal recognition is not a matter to be left to the parties, although operational rules will often be determined, or at least agreed to, by the parties.

 A detailed discussion of the Rotterdam Rules and UNCITRAL's Model Law is beyond the scope of this article.[[218]](#footnote-219) The point being made is simply that legislating for eBLs to be treated similarly to pBLs, where they perform the same function, requires choices to be made, as to what similarity means, and how it is to be determined; in particular, an eBL can be made more or less secure, and legislation needs to stipulate how secure it must be, and the factors to be taken into account.

 Whatever legislation is put in place, given that the electronic documents themselves cannot contain all the transfer information necessary to uniquely to determine entitlement,[[219]](#footnote-220) it will remain necessary to maintain a robust title or transfer database, and to that extent, the problems identified in this article will remain.

# CONCLUSION

The trade seems at last to be awakening from a slumber, and electronic equivalents to paper bills of lading are at last coming to fruition, but they are closed schemes, concentrating power in the hands of registries. It may take no more than use of a permissioned blockchain to decentralise this power sufficiently to give traders and carriers confidence to use these schemes (though other issues would remain).[[220]](#footnote-221) Alternatively, the technology allows for far more than that, should that be the preference of the commercial parties. This article considers some of the legal hurdles that will need to be surmounted, should that be the case.

1. . eg E Ong, 'Blockchain bills of lading', NUS Centre for Maritime Law Working Paper 18/07 (2018) 3, available at [https://ssrn.com/abstract=3225520](https://ssrn.com/abstract%3D3225520) (accessed 13 Nov 2019). [↑](#footnote-ref-2)
2. . Ong, ibid; nn 107-112 and associated text. [↑](#footnote-ref-3)
3. . Described eg K Love, 'Seadocs: The Lessons Learned' [1992] 2 Oil and Gas Law and Taxation Review 53. [↑](#footnote-ref-4)
4. . UK P&I, 'Bolero: History of the Bolero Project and the International Group of P&I Clubs (the Group) cover' <<https://www.ukpandi.com/knowledge-publications/publications/article/bolero-history-of-the-bolero-project-and-the-international-group-of-p-i-clubs-the-group-cover-1162/>> accessed 12 Nov 2019. On Bolero generally, M Goldby, Electronic Documents in Maritime Trade: Law and Practice (2nd ed, OUP 2013), [11.20]-[11.25]; L Zhao, 'Control of goods carried by sea and practice in e-commerce' [2013] JBL 585, 592. [↑](#footnote-ref-5)
5. . I use the common abbreviation 'eBL' throughout, for all electronic bills of lading, though Bolero refers to its documents as 'BBLs', on the grounds that they are not true bills of lading: n 171 and associated text. [↑](#footnote-ref-6)
6. . Clyde & Co, 'The Legal status of Electronic Bills of Lading: A report for the ICC Banking Commission', (2018), 5 <<https://cdn.iccwbo.org/content/uploads/sites/3/2018/10/the-legal-status-of-e-bills-of-lading-oct2018.pdf>> accessed 12 Nov 2019. On the CMI Rules, see M Goldby, 'The CMI Rules for Electronic Bills of Lading reassessed in the light of current practices' [2008] LMCLQ 56; M Goldby (n 4) [6.66]-[6.74]; L Zhao, 'The right of control in carriage of goods by sea' [2014] LMCLQ 394, 399-401. See also n 206. [↑](#footnote-ref-7)
7. . The wrongful delivery in The Sagona (nn 20, 112), where problems with paper bills were starkly demonstrated, took place in 1983, the same year as SeaDocs was launched. Bolero went live 20 years ago, in 1999. See further eg N Gaskell, 'Bills of lading in an electronic age' [2010] LMCLQ 233, 260; further on the history, Law Commission, 'Electronic Commerce: Formal requirements in commercial transactions - advice from the Law Commission' (2001) [4.2]-[4.4]; H Beale, L Griffiths, 'Electronic commerce: formal requirements in commercial transactions' [2002] LMCLQ 467, 477; L Zhao (n 4) 592. See also n 113. [↑](#footnote-ref-8)
8. . UK P&I Club Legal Briefing: Electronic Bills of Lading, May 2017 <<https://www.ukpandi.com/fileadmin/uploads/uk-pi/Documents/2017/Legal_Briefing_e_bill_of_Lading_WEB.pdf>>, 3, accessed 12 Nov 2019. Bolero and essDOCS were approved in 2010 and e-title in 2015. On essDOCS see also 'Users Agreement (DSUA)', at <https://www.essdocs.com/capabilities/users-agreement-dsua> accessed 12 Nov 2019. [↑](#footnote-ref-9)
9. . Bolero has an explicit Title Register: see nn 135-137 and associated text. [↑](#footnote-ref-10)
10. . International Group of P&I Clubs, 'International Group Circular – Bills of Lading and Blockchain Based System' (June 2019) <<https://www.igpandi.org/article/international-group-circular-bills-lading-and-blockchain-based-system>> accessed 12 Nov 2019, approving Global Share SA's edoxOnline. On blockchain and the other three systems, see n 179. [↑](#footnote-ref-11)
11. . See GlobalShare, 'International Group of P&I Clubs approves edoxOnline electronic Bill of Lading system supported by Blockchain tech' <<https://www.globalshare.com.ar/news/international-group-of-pi-clubs-approves-edoxonline-electronic-bill-of-lading-system-supported-by-blockchain-technology/>> accessed 12 Nov 2019. [↑](#footnote-ref-12)
12. . See nn 175-182 and associated text. [↑](#footnote-ref-13)
13. . eg Brown Brothers Harriman, 'Interview with essDOCS Co-Founder Alexander Goulandris' <<https://www.bbh.com/en-us/insights/interview-with-essdocs-co-founder-alexander-goulandris-16002>> accessed 12 Nov 2019. [↑](#footnote-ref-14)
14. . See nn 116-120; 208-209 and associated text. [↑](#footnote-ref-15)
15. . It has been observed that this 'requirement of membership has been known to be a major obstacle to the use of electronic bills of lading': K Takahashi, 'Blockchain technology and electronic bills of lading' [2016] JIML 202, 205; also ibid 210; also n 167. [↑](#footnote-ref-16)
16. . See nn 189-207 and associated text. [↑](#footnote-ref-17)
17. . See generally eg M Bools, The Bill of Lading: A Document of Title to Goods (LLP 1997); G Treitel and F M B Reynolds, Carver on Bills of Lading (4th ed, Sweet & Maxwell 2017) chs 2, 5 and 6. [↑](#footnote-ref-18)
18. . eg nn 47-48; 52; 90; 160-161 and associated text. [↑](#footnote-ref-19)
19. . This is constructive possession, The pBL also transfers symbolic possession, to enable the creation of a pledge (for example, to obtain finance under a documentary credit), without the need for the carrier, as bailee of the goods, to attorn (given that there could be no physical delivery): see nn 49-52 and associated text. [↑](#footnote-ref-20)
20. . Many instances, but eg *A/S Hansen-Tangens Rederi III v Total Transport Corp (The Sagona)* [1984] 1 Lloyd's Rep 194 (QBD); *Great Eastern Shipping Co Ltd v Far East Chartering Ltd (The Jag Ravi)* [2012] 1 Lloyd's Rep 637 (CA). [↑](#footnote-ref-21)
21. . See nn 62-80 and associated text. [↑](#footnote-ref-22)
22. . Beale and Griffiths, writing almost 20 years ago, looked forward to the day when 'an electronic bill of lading, transferable without reference back to the carrier or registry, is created': H Beale, L Griffiths (n 7) 477. This is not, however, yet possible: K Takahashi (n 15) 203-204 (explaining the problem); E Ong (n 1) 9. The blockchain is one way of providing the ledger required to guarantee uniqueness: Takahashi, ibid 208, on the role of the blockchain. It ensures uniqueness by recording transactions, and a timestamp.

This is the 'registry', distinguished from the 'token' model of an eBL: Ong, ibid 6-12. 'The registry model is incompatible with transferable documents like bills of lading because this model does not enable the act of delivery, nor the acts of indorsement and delivery': ibid 6. [↑](#footnote-ref-23)
23. . eg M Bools (n 17) ch 1; E Ong (n 1) 2. [↑](#footnote-ref-24)
24. . The conventional starting point is *Lickbarrow v Mason* (1794) 5 Term Rep 63 (CP), but the document of title concept was clarified only in eg *Barber v Meyerstein* (1870) LR 4 HL 317, *Glyn Mills Currie & Co v East and West India Dock Co* (1882) 7 App Cas 591 (HL), *Sanders Bros v Maclean & Co* (1883) 11 QBD 327 (CA) and *Sewell v Burdick* (1884) 10 App Cas 74 (HL). [↑](#footnote-ref-25)
25. . The CIF contract was a late nineteenth century concept, made possible only by the developments in bills of lading considered here: DM Sassoon, 'The Origin of FOB and CIF Terms and the Factors Influencing their Choice' [1967] JBL 32. [↑](#footnote-ref-26)
26. . See generally Carver on Bills of Lading (n 17) ch 6. [↑](#footnote-ref-27)
27. . Traditional, as opposed to delivery against letters of indemnity: n 112 and associated text. [↑](#footnote-ref-28)
28. . eg Goldby (n 6) 66; see n 92; Goldby (n 4) [6.33]. Custom of merchants is the basis of such recognition, and courts can be quite slow to adapt to commercial practices: see, in another context, J S Rogers, 'Negotiability, Property and Identity', Boston College Law School Legal Studies Research Paper Series (1990), available at <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=917144> accessed 12 Nov 2019. Also nn 92-94 and associated text. [↑](#footnote-ref-29)
29. . Many authorities from eg *Sze Hai Tong Ltd v Rambler Cycle Co Ltd* [1959] AC 576 (PC) to *Trafigura Beheer BV v Mediterranean Shipping Company SA (The MSC Amsterdam)* [2007] EWCA Civ 794, [2007] 2 Lloyd's Rep 622. [↑](#footnote-ref-30)
30. . ibid (both actions in both cases). A contractual term is implicit in the issue of the order bill: *Kuwait Petroleum Corp v I & D Oil Carriers Ltd (The Houda)* [1994] 2 Lloyd’s Rep 541 (CA) 553 (Leggatt LJ); for the straight bill of lading see *The Rafaela S* (nn 40; 85-90; 94). [↑](#footnote-ref-31)
31. . eg *East West Corpn v DKBS AF 1912 A/S* [2003] EWCA Civ 83, [2003] QB 1509. [↑](#footnote-ref-32)
32. . *Glyn Mills Currie & Co v East and West India Dock Co* (n 24). [↑](#footnote-ref-33)
33. . *The Houda* (n 30). [↑](#footnote-ref-34)
34. . Though the juristic basis of *Glyn Mills* (n 24) is not entirely clear, the best explanation is probably that to deliver against an original document of title is not wrongful, and hence not a conversion: eg M Bools (n 17) 166, citing Bramwell LJ: (1880) 6 QBD 475 (CA) 491. If so, the decision applies only to a document that has become a document of title by custom of merchants, so *not* to an electronic bill of lading. Lord Selborne LC reasons strongly on the role of a bill of lading 'by mercantile law and usage': (1882) 7 App Cas 591, 596. Bailment is fault-based: eg *Morris v CW Martin & Sons* [1966] 1 QB 716 (CA) 726 (Lord Denning MR). A carrier who delivers against an original document of title should not therefore be liable in bailment. [↑](#footnote-ref-35)
35. . *The Houda* (n 30). [↑](#footnote-ref-36)
36. . See further nn 92-94 and associated text. [↑](#footnote-ref-37)
37. . See generally nn 188-207 and associated text. [↑](#footnote-ref-38)
38. . See nn 48; 79 and associated text. For a pBL it does not matter, because the courts recognise that lawful dealings with a document of title are protected: see n 34.

Bailment may not pose the same difficulties: ibid. However, the possible models described nn 188-207 and associated text can guard against the possibility that it might. [↑](#footnote-ref-39)
39. . See n 24. [↑](#footnote-ref-40)
40. . *Sewell v Burdick* (n 24), where transfer to a bank as pledgee was held to have transferred only the special property of a pledgee, and not the general property in the goods; described *J I Macwilliam Co Inc v Mediterranean Shipping Co SA (The Rafaela S)* [2005] UKHL 11; [2005] 2 AC 423, [69] (Lord Rodger). For sale contracts, the primacy of the parties' intention has been codified, at least for ascertained goods, in Sale of Goods Act 1979, s 17. [↑](#footnote-ref-41)
41. . *Ross T Smyth & Co Ltd v T D Bailey Son & Co* (1940) 67 Ll L Rep 147 (HL); *Ginzberg v Barrow Haematite Steel Co Ltd* [1966] 1 Lloyd's Rep 343 (QB). [↑](#footnote-ref-42)
42. . See further P Omar, International Insolvency Law: Reforms and Challenges (Ashgate 2013), 31-32. [↑](#footnote-ref-43)
43. . Conditional property, at least under a CIF contract, which can revest in the seller if the buyer rejects the goods on inspection after arrival: *Kwei Tek Chao v British Traders and Shippers Ld* [1954] 2 QB 459 (QB) 487-488 (Devlin J). [↑](#footnote-ref-44)
44. . As long as the electronic bill of lading gave rights against the carrier, to make it a requirement should not create problems, even for CIF contracts: the repugnancy issues in *Comptoir d'Achat et de Vente du Boerenbond Belge S/A v Luis de Ridder Limitada (The Julia)* [1949] AC 293 (HL) should not arise here. [↑](#footnote-ref-45)
45. . *Mirabita v Imperial Ottoman Bank* (1878) 3 Ex D 164 (CA). [↑](#footnote-ref-46)
46. . On property generally, see Goldby (n 4) [6.36]-[6.41]. H Beale, L Griffiths (n 7) 478 observe that the 'intention of the seller could be shown equally where an electronic contract for carriage was used'. (Property passes when the parties intend it to pass: n 40.) [↑](#footnote-ref-47)
47. . eg Rights of Suit in Respect of Carriage of Goods by Sea (Law Com No 196; Scot Law Com No 130: 1991) [2.9], commenting in particular on *Enichem Anic SpA v Ampelos Shipping Co Ltd (The Delfini)* [1990] 1 Lloyd's Rep 252 (CA). This is one of the reasons why the property link in the Bills of Lading Act 1855 was dropped in the Carriage of Goods by Sea Act 1992. The report is available at [www.scotlawcom.gov.uk/download\_file/view/267/](http://www.scotlawcom.gov.uk/download_file/view/267/) accessed 12 Nov 2019. On the 1992 Act see nn 57-59 and associated text. [↑](#footnote-ref-48)
48. . See nn 79, 129-130 and associated text. [↑](#footnote-ref-49)
49. . eg *Barber v Meyerstein* (n 24) 333 (Lord Hatherley); *Sanders Brothers v Maclean & Co* (n 24) 327 (Bowen LJ). This is more than the constructive possession (or right to take possession) described at n 19 and associated text; the law treats the bill of lading holder as if he were legally in possession. See generally on possession Bools (n 17), ch 7. [↑](#footnote-ref-50)
50. . eg *Sewell v Burdick* (n 24) 83 (Earl of Selborne). [↑](#footnote-ref-51)
51. . [1935] AC 53 (PC) 58-59, cited *The Future Express* [1993] 2 Lloyd's Rep 542 (CA) 550 (Lloyd LJ). The carrier is the third party pledgee. [↑](#footnote-ref-52)
52. . Though the pledgee's rights were described in *Sewell v Burdick* (n 24) in terms of special property in the goods, implying that, like general property, they can be transferred by intention alone, this is a misnomer. The term is simply shorthand for a pledgee's right to retain the goods until the pledge is honoured and, if it is not, to sell the goods and reimburse itself out of the proceeds: *The Odessa* [1916] 1 AC 145 (PC) 158, cited *Kum v Wah Tat Bank* [1971] 1 Lloyd's Rep 439, 447 (PC). It is possession that needs to be transferred: ibid 442, cited *The Future Express* [1992] 2 Lloyd's Rep 79 (QB) affd CA (n 51). A pledge of goods is not complete without delivery, requiring the transfer of a document of title (which an electronic bill of lading is not) or an attornment. Also H Beale, L Griffiths (n 7) 484. [↑](#footnote-ref-53)
53. . eg *Inglis v Stock* (1885) 10 App Cas 263 (HL) (FOB); *Bergerco USA v Vegoil Ltd* [1984] 1 Lloyd's Rep 440 (QBD) 443 (Hobhouse J) for a description of the C & F/CIF scheme. [↑](#footnote-ref-54)
54. . If the sales are CIF, the shipper will be the first seller in the chain; if the first contract is FOB, the contracting shipper might be either the first seller or the first buyer, but is unlikely to be the ultimate receiver: *Pyrene Co Ltd v Scindia Navigation Co Ltd* [1954] 2 QB 402 (QBD) 424 (Devlin J) for classifications of FOB contract; also *Scottish & Newcastle International Ltd v Othon Ghalanos Ltd* [2008] 1 Lloyd's Rep 462 (HL) [34]-[35] (Lord Mance). [↑](#footnote-ref-55)
55. . ibid [↑](#footnote-ref-56)
56. . See generally nn 62-80 and associated text. [↑](#footnote-ref-57)
57. . *Thompson v Dominy* (1845) 14 M & W 403; 153 ER 532, the headnote to which states: 'A bill of lading is not negotiable like a bill of exchange, so as to enable the indorsee to maintain an action upon it in his own name; the effect of the indorsement being only to transfer the right of property in the goods, but not the contract itself'. The decision was reversed by the Bills of Lading Act 1855, the Preamble to which began: 'Whereas, by the custom of merchants, a bill of lading of goods being transferable by indorsement, the property in the goods may thereby pass to the indorsee, but nevertheless all rights in respect of the contract contained in the bill of lading continue in the original shipper or owner; and it is expedient that such rights should pass with the property ...', and s 1 then provided for that to happen. Sometimes at common law, a new contract could be implied, as was later explained in *Brandt v Liverpool, Brazil and River Plate Steam Navigation Co Ltd* [1924] 1 KB 575 (CA), but whether a contract can be implied depends heavily on the facts, and the doctrine does not apply generally: *The Aramis* [1989] 1 Lloyd's Rep 213 (CA); *Mitsui & Co Ltd v Novorossiysk Shipping Co (The Gudermes)* [1993] 1 Lloyd's Rep 311. See generally G H Treitel 'Bills of lading: liabilities of transferee' [2001] LMCLQ 344, 345-346; also the descriptions of the developments of the law in (eg) *The Albazero* [1977] AC 774 HL 842 (Lord Diplock); *Borealis AB v Stargas Ltd (The Berge Sisar)* [2002] 2 AC 205 HL [18]-[21] (Lord Hobhouse). [↑](#footnote-ref-58)
58. . Replacing the Bills of Lading Act 1855. The 1992 Act can also impose contractual liabilities, discussed in the context of Bolero, nn 138-139 and associated text. [↑](#footnote-ref-59)
59. . Section 1(5), as amended by Communications Act 2003, Sch 17, para 119, allows the Secretary of State to make provision by regulations for the application of the Act to electronic bills of lading, but this has not happened. The documents which are covered are listed in s 1(1) with definitions in ss 1(2)-1(4). [↑](#footnote-ref-60)
60. . *The Ardennes* [1951] 1 KB 55 (KBD); *Leduc & Co v Ward* (1888) LR 20 QBD 475 (CA). cf C Debattista, 'The bill of lading as the contract of carriage - a reassessment of *Leduc v Ward*' (1982) 45 MLR 652, for a slightly different view. [↑](#footnote-ref-61)
61. . Bolero Rulebook (n 129) [3.5.1]. [↑](#footnote-ref-62)
62. . *The Houda* (n 30). [↑](#footnote-ref-63)
63. . eg *The Rafaela S* (n 40) (HL) [6] (observations of Lord Bingham); *The Rafaela S* [2002] EWCA Civ 556; [2003] 2 Lloyd's Rep 113 [145] (Rix LJ); Clearly in the minds of their Lordships in *Glyn Mills* (n 24) esp 598-600 (Earl Cairns); cf G H Treitel, 'Legal status of straight bills of lading' (2003) 119 LQR 608, 616. [↑](#footnote-ref-64)
64. . *Glyn Mills* (n 24) (at least assuming no notice of a competing title). [↑](#footnote-ref-65)
65. . eg, *Compania Portorafti Commerciale SA v Ultramar Panama (The Captain Gregos) (No 2)* [1990] 2 Lloyd's Rep 395 CA (conversion action by intermediate purchaser PEAG, who, unlike eventual receiver BP, had no contract with the carrier). PEAG but not BP would have been able to avoid the Hague-Visby time bar.

Where a pBL is used, there is no need for contractual defences, but the carrier will need contractual defences where an eBL is used: nn 34; 38, 75; 76 and associated text. [↑](#footnote-ref-66)
66. . As in *East West Corpn v DKBS AF 1912 A/S* (n 31). Note that where the shipper sues, the COGSA 1992 problems in *East West* would not apply to an eBL. [↑](#footnote-ref-67)
67. . *Leigh and Sillavan Ltd v Aliakmon Shipping Co Ltd (The Aliakmon)* [1986] AC 785 (HL) 808 (Lord Brandon): see nn 190-193 and accompanying text. In particular, Professor Goode's attornment in advance theory has been expressly rejected: *The Future Express* [1992] 2 Lloyd's Rep 79 QBD 95 (Diamond J); affd CA (n 51) 550 (Lloyd LJ), rejecting R M Goode, Proprietary Rights and Insolvency in Sales Transactions (2nd ed, Sweet & Maxwell 1989), 9. [↑](#footnote-ref-68)
68. . *Borealis AB v Stargas Ltd (The Berge Sisar)* (n 57) [18]. [↑](#footnote-ref-69)
69. . ibid [19]. This was an FOB contract where the consignees were charterers of the vessel: ibid [7]. See generally N Palmer, Palmer on Bailment (3rd ed, Sweet & Maxwell 2009), [1-019]; P Todd, 'The bill of lading and delivery: the common law actions' [2006] LMCLQ 539, 549; 552-558 and citations therein; S Baughen, 'Bailment or conversion? Misdelivery claims against non-contractual carriers' [2010] LMCLQ 411. [↑](#footnote-ref-70)
70. . *The Albazero* (n 57) 786 (Brandon J); 842 (Lord Diplock). The report covers first instance, CA and HL. [↑](#footnote-ref-71)
71. . *East West* (n 31) [34]-[35] (Mance LJ). This is also the categorisation adopted in Palmer (n 69). [↑](#footnote-ref-72)
72. . An FOB seller ought therefore to be considered bailor if he is contracting with the carrier as principal, but the buyer will be bailor where the seller contracts as buyer's agent. For the classifications of FOB contract, see n 54. [↑](#footnote-ref-73)
73. . eg *The Gudermes* (n 57) 328 (Staughton LJ) (not clear whether this applies to *all* bailment obligations). [↑](#footnote-ref-74)
74. . *MCC Proceeds Inc v Lehman Brothers International (Europe)* [1998] 4 All ER 675 (CA). In a maritime context, eg *Anonima Petroli Italiana SpA v Marlucidez Armadora SA (The Filiatra Legacy)* [1991] 2 Lloyd's Rep 337 (CA) 342, where Mustill LJ clearly ties in title to sue with the passing of property. [↑](#footnote-ref-75)
75. . See n 34 and accompanying text. [↑](#footnote-ref-76)
76. . Because the carrier's act is not wrongful where a document of title is used: see nn 34; 38. [↑](#footnote-ref-77)
77. . Ideally though, the holder (who should have a contract) should always have the property, to ensure that conversion actions can be brought only by parties (present or past) to the carriage contract: see n 48. [↑](#footnote-ref-78)
78. . See nn 131-134 and associated text. [↑](#footnote-ref-79)
79. . Problematic situations would be if property passes on shipment, and the bill of lading is never negotiated, since there will not then be a contract between cargo-owner and carrier, and if an FOB seller retains property but is not the contracting shipper. An open system ideally needs sale contracts to avoid this situation occurring. [↑](#footnote-ref-80)
80. . eg M Goldby (n 4) [6.44]; [6.71]. One possibility, at any rate for cargo discharged from the ship and stored ashore, might be the PIN code system adopted in *Glencore International AG v MSC Mediterranean Shipping Co SA* [2017] EWCA Civ 365; [2017] 2 Lloyd's Rep 186, a case which demonstrates the need to make proper contractual provision, for anything other than delivery against presentation of a physical document. The PIN code (which was needed in *Glencore* to obtain delivery) could be communicated to the holder of the electronic document. On the Bolero delivery provisions, see nn 155-157 and associated text. On *Glencore* see n 125. [↑](#footnote-ref-81)
81. . See n 59. [↑](#footnote-ref-82)
82. . As amended: see n 59. [↑](#footnote-ref-83)
83. . Carriage of Goods by Sea Act 1971, s 1(4). The precise criteria for the Rules' application are set out in Art X. [↑](#footnote-ref-84)
84. . eg M Goldby (n 4) [6.15]. [↑](#footnote-ref-85)
85. . *The Rafaela S* (n 40). [↑](#footnote-ref-86)
86. . ibid [4] (Lord Bingham). Thus the contract provided expressly for what was implied in *The Houda* (n 30) for an order bill. [↑](#footnote-ref-87)
87. . Assuming meaning can be given to the notion of surrender, in an electronic context: nn 80; 155-157 and associated text. [↑](#footnote-ref-88)
88. . H Beale, L Griffiths (n 7) 477 argue that an eBL is not within *any* definition of document of title, but this was written before *The Rafaela S*. They also observe, however, that 'the provisions of these Acts can be incorporated by contract, if the parties choose to do so'. [↑](#footnote-ref-89)
89. . This is similar to the issues at nn 213-217 and associated text; it is more difficult legally to define an eBL than a pBL. [↑](#footnote-ref-90)
90. . As in (eg) Congenbill 2016, cl 2 (general paramount clause). For a recent example of a typical clause, eg *Yemgas FZCO v Superior Pescadorts (The Superior Pescadores)* [2016] EWCA Civ 101, [2016] 1 Lloyd's Rep 561, incorporating into the pBL (it was held) the Hague-Visby Rules. But paramount clauses are common in paper bills of lading. [↑](#footnote-ref-91)
91. . In respect of straight bills, *The Rafaela S* (n 40); *Voss v APL Co Pte Ltd* [2002] 2 Lloyd's Rep 707 (Sing CA); for received for shipment bills, *Marlborough Hill (Ship) v Cowan & Sons* [1921] 1 AC 444 (PC); *Diamond Alkali Export Corp v FL Bourgeois* [1921] 3 KB 443 (QB); *Ishag v Allied Bank International* [1981] 1 Lloyd's Rep 92 (QB). [↑](#footnote-ref-92)
92. . Including a local custom: *Kum v Wah Tat Bank Ltd* (n 52) (mate's receipt). [↑](#footnote-ref-93)
93. . eg M Goldby (n 6) 66: 'electronic bills have certainly not been used long enough or widely enough to become documents of title by mercantile usage or custom'. See n 25. [↑](#footnote-ref-94)
94. . Though the ratio of *The Rafaela S* (n 40) is only that a straight bill of lading is a document of title within the Hague-Visby Rules, it is remotely arguable, on a very wide interpretation, that it is also a document of title at common law, in which case the common law recognises documents of title other than by custom of merchants: *The Rafaela S* (n 63) [145] (Rix LJ); *Voss v APL Co Pte Ltd* (n 91); *The Rafaela S* (n 40) [20]-[24] (Lord Bingham), [58]-[78] (Lord Rodger), (more equivocal); cf [45], [51] (Lord Steyn, who agrees with Rix LJ); See generally G Treitel (n 63) 612, who is very critical of the CA decision in *The Rafaela S*. The straight bill there expressly required delivery only against production (as in *The Houda* (n 30)), and an electronic bill can also do this (assuming a meaning can be given to the idea of production). But it would be a foolish designer of an electronic bill of lading who relied on it being a document of title at common law, on the basis of this authority. *The Rafaela S* does, however, demonstrate the efficacy of making express contractual provision for delivery, and any electronic bill of lading ideally needs to do this. See also nn 80; 155-157 and associated text. [↑](#footnote-ref-95)
95. . eg P Todd, 'Representations in bills of lading' [2003] JBL 160. Goldby (n 4) [5.05]-[5.18] [↑](#footnote-ref-96)
96. . For a description of digital signatures, C Reed, 'What is a Signature?' (2000) 3 JILT, [1.2] <<https://warwick.ac.uk/fac/soc/law/elj/jilt/2000_3/reed>> accessed 12 Nov 2019; J Bacon, JD Michels, C Millard and J Singh, 'Blockchain Demystified', Queen Mary School of Law Legal Studies Research Paper No 268/2017, 9-10 <<https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3091218>> accessed 12 Nov 2019; Bolero Rulebook (n 117) [1.1]. [↑](#footnote-ref-97)
97. . eg Todd (n 95) 173-174. [↑](#footnote-ref-98)
98. . (1851) 10 CB 665; 138 ER 263 (CB). [↑](#footnote-ref-99)
99. . eg *Heskell v Continental Express Ltd* (1949-50) 83 Ll L Rep 438 (KBD). [↑](#footnote-ref-100)
100. . See n 59. [↑](#footnote-ref-101)
101. . eg *The Nea Tyhi* [1982] 1 Lloyd’s Rep 606 (QBD); *The Saudi Crown* [1986] 1 Lloyd's Rep 261 (QBD); *Homburg Houtimport BV v Agrosin Private Ltd (The Starsin)* [2000] 1 Lloyd's Rep 85 (QBD) [2000] 1 Lloyd's Rep 85 (QBD), affd other grounds [2004] 1 AC 715 (HL); cf M Goldby (n 6) 64; M Goldby (n 4) [5.07]. On *Grant v Norway* generally, see eg P Todd (n 85) 177-178. [↑](#footnote-ref-102)
102. . Also Goldby on the legislation's importance being limited by clauses in bills qualifying quantity statements, such as that in *Agrosin Pte Ltd v Highway Shipping Co Ltd (The Mata K)* [1998] 2 Lloyd’s Rep 614 (QBD): Goldby (n 4) [5.17]. [↑](#footnote-ref-103)
103. . For example, the *Glyn Mills* protection (n 24), probably applies only where delivery is made against an original bill of lading: see n 34. [↑](#footnote-ref-104)
104. . eg n 15. [↑](#footnote-ref-105)
105. . eg text around nn 23-25. [↑](#footnote-ref-106)
106. . Actually, the assumption was not always correct even then: eg *Sanders Brothers v Maclean & Co* (n 24), where the buyers (wrongfully it was held) rejected the bills of lading tendered, one ground being that the vessel would arrive first. The voyage was from the Black Sea to Philadelphia, and though the bills of lading quickly reached London, they may well have been unable to cross the Atlantic faster than the vessel herself. [↑](#footnote-ref-107)
107. . eg Sir Anthony Lloyd, 'The bill of lading: do we really need it?' [1989] LMCLQ 47, 49. [↑](#footnote-ref-108)
108. . A probably routine example is *The Delfini* (n 47), where the documents reached the *sellers'* bank only a fortnight after discharge commenced, and were never presented to the buyers at all. There may, of course, be other reasons for delay, but where delivery is made without production, as in eg the authorities in n 29, it must be delays to the bill of lading that are causing the problems. [↑](#footnote-ref-109)
109. . eg Gaskell (n 7) 260 n 160; UK P&I Club Legal Briefing (n 8) 4. [↑](#footnote-ref-110)
110. . eg the authorities in n 29; *Motis Exports Ltd v Dampskibsselskabet AF 1912, Aktieselskab* [2000] 1 Lloyd's Rep 211 (CA). [↑](#footnote-ref-111)
111. . As long as thirty years ago, Sir Anthony Lloyd observed that on the North Atlantic container route, 'perhaps 70% of all liner goods are carried on sea waybills': (n 107), 49. Clyde & Co, in their report for the ICC Banking Commission, also observe that 'Replicating in electronic form the transferable nature of an original bill of lading is both technically and legally more complex than replicating the function of, for example, a non-negotiable sea waybill': (n 6), 6. [↑](#footnote-ref-112)
112. . Suppose eg a case such as *The Sagona* (n 20). An oil cargo was delivered without production of the bill of lading (which was held by a bank earlier in the chain). The oil would have been mixed in the receiver's tanks, and possibly consumed. The bank as holder undoubtedly had an action against the shipowner, who was indemnified under what was held to be an implied indemnity from the charterers. But suppose the shipowner had been in liquidation. What use is the bill of lading then? Delivery without production, against an indemnity, deprives the holder of rights to the goods (certainly if they have been consumed), which the traditional pBL is intended to protect. For other disadvantages, see Clyde & Co (n 6), 9. [↑](#footnote-ref-113)
113. . eg M Goldby, 'Electronic bills of lading and central registries: what is holding back progress?' (2008) 17 ICTL 125, 125. [↑](#footnote-ref-114)
114. . UK P&I Club Legal Briefing (n 8). [↑](#footnote-ref-115)
115. . Goulandris (n 13). [↑](#footnote-ref-116)
116. . See nn 13-14; also nn 208-209 and associated text. [↑](#footnote-ref-117)
117. . See nn 82-90 and associated text. [↑](#footnote-ref-118)
118. . On the Rotterdam Rules, see further nn 211-213 and associated text. [↑](#footnote-ref-119)
119. . Contracts (Rights of Third Parties) Act 1999, s 6(5): see n 199. [↑](#footnote-ref-120)
120. . See n 45 and associated text. [↑](#footnote-ref-121)
121. . See n 96 and associated text. [↑](#footnote-ref-122)
122. . See nn 91-97 and associated text. [↑](#footnote-ref-123)
123. . See n 111. [↑](#footnote-ref-124)
124. . eg Clyde & Co (n 6) 6. [↑](#footnote-ref-125)
125. . Such as that used to allow the consignee to take delivery in *Glencore* (n 80). (Further resales using the PIN were not effected in *Glencore*, but a PIN code could in theory be used in this way.) [↑](#footnote-ref-126)
126. . See n 22. [↑](#footnote-ref-127)
127. . The problem in *Glyn Mills* (n 24). The lessons from this case appear not to have been learned, 140 years on. [↑](#footnote-ref-128)
128. . See nn 8; 10-11. [↑](#footnote-ref-129)
129. . The Bolero Rulebook and Operating Procedures used to be (but are no longer) freely available on the Internet. References here are to therefore to documents that were publicly available (and downloadable) in the past. There is quite a full essDocs website, but as Gaskell observes: 'The ESS website is distinctly short on "academic" explanation and shrewdly presents the process as simple and straightforward': N Gaskell (n 7) 261 n 166. On the Databridge Services and Users Agreement (DSUA), the essDocs equivalent of the Bolero Rulebook, see n 8. [↑](#footnote-ref-130)
130. . For published descriptions of Bolero, D Faber, 'Electronic Bills of Lading' [1996] LMCLQ 232, 241-243; Goldby (n 113); L Zhao (n 4) 592-594. On essDocs, Gaskell (n 7) 261-264; L Zhao, ibid 594. That both operate on similar principles of novation and attornment: L Zhao (n 6) 399. See generally Goldby (n 4) ch 11 (Bolero, essDOCS and edoxOnline); App 1 (ESS-Databridge sample bill of lading). [↑](#footnote-ref-131)
131. . Bolero Rulebook [2.1.1]. [↑](#footnote-ref-132)
132. . Bolero International Ltd is the Bolero joint venture company. The Bolero Association links users. [↑](#footnote-ref-133)
133. . See nn 62-80 and associated text. [↑](#footnote-ref-134)
134. . Assuming the Bolero bill of lading is not a document of title, it is essential for carrier defences to ensure that a non-party to Bolero (who will not have a contract with the carrier) can never sue the carrier. See nn 77-79 and associated text. [↑](#footnote-ref-135)
135. . Bolero Rulebook, Part 3 ('Bolero Title Registry'). [↑](#footnote-ref-136)
136. . But this is one area where a blockchain may permit greater decentralisation: see nn 176-182 and associated text. [↑](#footnote-ref-137)
137. . Entitlement can be deduced from a transaction ledger. essDocs does not have a title register as such, but the '... system recognises the authority and capabilities of the person logging in': Gaskell (n 7) 261, 263. Some kind of record must therefore be kept: also Takahashi (n 15). [↑](#footnote-ref-138)
138. . Generally, Bolero Rulebook, Part 3. There is a table of functions, and powers of the various parties, at [3.8]. Discussion of all the document types is beyond the scope of this article, but they allow for a shipper, to order party or a consignee to be other than the holder, and include provision for a 'consignee or order' bill to be issued to a shipper, and (eg) for an FOB buyer to be shipper, but for the bill of lading to be issued to the seller, either to order of seller or buyer. On the functions, see also Zhao (n 4) 593-594. [↑](#footnote-ref-139)
139. . Bolero Rulebook [3.5]; the precise way in which this is done, by designating parties as holders, is beyond the scope of this article, but see eg Goldby (n 4) [6.25]. On the effect of novation, ibid [6.23]. Its advantage over assignment is that it deals with liabilities as well as rights: 'Bolero Legal Feasibility Study' (2nd ed, Bolero, updated 1999) [6.8]; see also n 195. [↑](#footnote-ref-140)
140. . cf e-titleTM, which does not novate but incorporates COGSA 92 explicitly: UK P&I Club Legal Briefing: Electronic Bills of Lading (n 8) 5. [↑](#footnote-ref-141)
141. . On the 1992 Act see nn 57-48 and associated text; on pledges see nn 49-52 and associated text. [↑](#footnote-ref-142)
142. . *Argo Fund Ltd v Essar Steel Ltd* [2005] EWHC 600 (Comm); [2005] 2 Lloyd's Rep 203 (QB) [61] (Aikens J). [↑](#footnote-ref-143)
143. . See nn 131-134 and associated text. [↑](#footnote-ref-144)
144. . Though it makes sense for some purposes to treat the carriage contracts separately, eg in respect of application of the Hague-Visby Rules, the situation here is not one where there is no pre-existing contract at all between the parties. [↑](#footnote-ref-145)
145. . M Clarke, 'Transport documents: their transferability as documents of title; electronic documents', [2002] LMCLQ 356, 365-366; M Clarke, 'A black letter lawyer looks at Bolero' [1999] ITLQ 69, 73-75; P Mallon and A Tomlinson, 'Bolero: electronic "bills of lading" and electronic contracts of sale' [1998] ITLQ 257, 263. [↑](#footnote-ref-146)
146. . See n 203, the point being that there need not be pre-existing multipartite contracts with an open scheme. [↑](#footnote-ref-147)
147. . The problem in *Pyrene Co Ltd v Scindia Navigation Co Ltd* (n 54) 426. The seller there was unsuccessful because a collateral contract was there implied, but this solution should not be assumed to be of general application, given the negative comments in *Scruttons Ltd v Midland Silicones Ltd* [1962] AC 446 (HL) 471 (Viscount Simonds). Bolero can resolve this issue by allowing an FOB buyer to be shipper, but for the bill of lading to be issued to the seller: n 138. In any case, however, everyone is party to the Bolero multipartite contract. [↑](#footnote-ref-148)
148. . Because the Carriage of Goods by Sea Act 1992 would not operate either, where the property owner does not become holder. [↑](#footnote-ref-149)
149. . See n 24. [↑](#footnote-ref-150)
150. . A bailment action should fail because the carrier would not be at fault: n 34. Ignorance of the claimant's title is however no defence to a conversion action: *Motis Exports* (n 110); *The MSC Amsterdam* (n 29) (where not even an issue). [↑](#footnote-ref-151)
151. . Bolero Operating Procedures (n 93) ch 5 ('Enrolment'). [↑](#footnote-ref-152)
152. . Bolero Rulebook [3.4.2], cited in this regard M Goldby (n 6) 66, fn 67; M Goldby (n 113) 130; Faber (n 130) 243. Various categories of holder are set out in the original, but the complex array of holders and other parties in Bolero is beyond the scope of this article. See further H Beale, L Griffiths (n 7) 475 n 64.

A detailed consideration of the complex range of Bolero documents, holders and other parties is beyond the scope of this article. See generally, Bolero Rulebook, Part 3. There is a table of functions, and powers of the various parties, at [3.8]. Also L Zhao (n 4) 594 (Table 1). [↑](#footnote-ref-153)
153. . See n 52. [↑](#footnote-ref-154)
154. . For Bolero see n 152. On novation and attornment under essDOCS, see Clyde & Co (n 6) 9; UK P&I Club Legal Briefing: Electronic Bills of Lading (n 8) 5. [↑](#footnote-ref-155)
155. . Bolero Rulebook [3.6]. As before, particular varieties of Bolero holder are beyond the scope of this article: see n 152. [↑](#footnote-ref-156)
156. . Bolero Operating Procedures [4.4.6]. [↑](#footnote-ref-157)
157. . On essDOCS, see Gaskell (n 7) 263. [↑](#footnote-ref-158)
158. . See nn 44-48 and associated text. [↑](#footnote-ref-159)
159. . ibid. [↑](#footnote-ref-160)
160. . See nn 48; 79 and associated text. [↑](#footnote-ref-161)
161. . ibid. pBL sale contracts are often silent on property (including INCOTERMS). Oil contracts sometimes provide for property to pass on shipment, perhaps because the pBL is worthless as security if it arrives long after the cargo has been delivered: see n 112. With an eBL, however, where that should not happen, it may make sense to pass property with the eBL.

It matters less with a closed system, as long as the buyer is party to the multiparty contract by virtue of his membership; the rule book can preclude actions other than in contract. [↑](#footnote-ref-162)
162. . UCP 600, art 14(b). [↑](#footnote-ref-163)
163. . They often are, even with chains: eg *K/S A/S Seateam & Co v Iraq National Oil Co (The Sevonia Team)* [1983] 2 Lloyds Rep 640, where there were three successive FOB purchasers, all of whom were known at the time of shipment. [↑](#footnote-ref-164)
164. . eg Goldby (n 6) 68, observing that 'a distinction could be made between access in order to view the information contained in the bill and access which enables one to control or transfer the bill'. [↑](#footnote-ref-165)
165. . At any rate there have been various XML initiatives, which would necessarily impose a degree of standardisation on data: eg <https://www.gartner.com/en/documents/338784/xml-in-international-trade-bolero-net>; <http://xml.coverpages.org/BoleroConventionsV04.doc> both accessed 13 Nov 2019. [↑](#footnote-ref-166)
166. . Subject to the unlikely argument at n 94. [↑](#footnote-ref-167)
167. . Goldby (n 113) 132; also n 15. [↑](#footnote-ref-168)
168. . Bolero Rulebook [3.7]; Clyde & Co (n 6) 10; Takahashi (n 15) 205. [↑](#footnote-ref-169)
169. . eg E Ong (n 1) 4-7. [↑](#footnote-ref-170)
170. . Gaskell (n 7) 262, citing H Beale, L Griffiths (n 7) 477. [↑](#footnote-ref-171)
171. . BBLs as opposed to eBLs: Law Commission (n 7) [4.7] n 5; H Beale, L Griffiths (n 7) 477; Bolero Legal Feasibility Study (n 139) 42. [↑](#footnote-ref-172)
172. . Ong (n 1) 6. [↑](#footnote-ref-173)
173. . See nn 83-94 and associated text. [↑](#footnote-ref-174)
174. . The CMI Rules on Electronic Bills of Lading envisaged an open system as long ago as 1990. See n 6. [↑](#footnote-ref-175)
175. . For detailed descriptions and comparisons, eg E Ganne, 'Can Blockchain revolutionize international trade?' (WTO, 2018) viii; J Bacon et al (n 96). [↑](#footnote-ref-176)
176. . eg UK P&I Club Legal Briefing: Electronic Bills of Lading (n 8) 7. [↑](#footnote-ref-177)
177. . On the dangers of the 51 per cent attack, see Bacon et al (n 92) 17-19 and Table 5; G Clarke, 'After Ethereum Classic Suffers 51% Hack, Experts Consider - Will Bitcoin Be Next?' (Forbes, 9 Jan 2019) at <[https://www.forbes.com/sites/ginaclarke/2019/01/09/after-ethereum-classic-suffers-51-hack-experts-consider-will-bitcoin-be-next/#5f3a9870a56b](https://www.forbes.com/sites/ginaclarke/2019/01/09/after-ethereum-classic-suffers-51-hack-experts-consider-will-bitcoin-be-next/%235f3a9870a56b)> accessed 8 Nov 2019. [↑](#footnote-ref-178)
178. . Because fewer points of failure. See generally Goldby (n 4) [6.46]; Takahashi (n 15) 206; Bacon et al (n 96) 13; Ganne (n 175) 10;13. [↑](#footnote-ref-179)
179. . All the existing schemes are in the process of integrating with the blockchain platform Voltron: <<https://www.gtreview.com/news/fintech/essdocs-to-integrate-e-bill-of-lading-with-voltron-blockchain-platform/>> (essDOCS with CargoDocs and DocEx; also eTitle); <<http://www.bolero.net/concern-about-lack-of-standards-highlights-the-benefits-of-bolero-at-sibos-2018/> (Bolero), both accessed 13 Nov 2019. Details of the precise uses that might be made of the blockchains have not been made public. [↑](#footnote-ref-180)
180. . Even with a public blockchain, only the data needed to validate the transactions needs to be stored, one of the supposed attractions of BitCoin being in other respects its anonymity. On distrust, see nn 15; 167. For an argument that, at any rate for a closed system, a blockchain should be permissioned, Goldby (n 4) [6.46]. [↑](#footnote-ref-181)
181. . eg the chains of assignments and indemnities discussed in the next section. [↑](#footnote-ref-182)
182. . On the advantages of decentralisation, see Takahashi (n 15) 206 (fewer points of failure). Even an open blockchain can operate essentially anonymously: ibid 210-211; Bacon et al (n 96) 29-30. [↑](#footnote-ref-183)
183. . E Ganne (n 175) 13; Bacon et al (n 96). [↑](#footnote-ref-184)
184. . ibid. [↑](#footnote-ref-185)
185. . N Szabo, 'Smart Contracts' (1994) <<http://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart.contracts.html>> accessed 13 Nov 2019, cited Bacon et al (n 96) 27 n 104; E Ganne (n 175) 13. They are not smart, in that there is (as yet anyway) no element of machine learning, or artificial intelligence: eg, J Reed, Smart Contracts: The Essential Guide to Using Blockchain Smart Contracts for Crypocurrency Exchange, (Kindle 2016) ch 4; C Reed, 'Beyond BitCoin — legal impurities and off-chain assets' (2018) 26 ILLIT 160, 161. [↑](#footnote-ref-186)
186. . Szabo, ibid. [↑](#footnote-ref-187)
187. . Ethereum makes use of them to allow its blockchain-based crypto-currency to purchase computer processing power: eg E Ganne (n 175) 13. [↑](#footnote-ref-188)
188. . See nn 59; 82. [↑](#footnote-ref-189)
189. . See nn 152-154 and associated text. [↑](#footnote-ref-190)
190. . *The Aliakmon* (n 67) 808. [↑](#footnote-ref-191)
191. . See n 57. This was decided in the CA, and was not an issue in the HL: [1985] QB 350 (CA). [↑](#footnote-ref-192)
192. . *The Aliakmon* (n 67) 818 (Lord Brandon). [↑](#footnote-ref-193)
193. . ibid 819, Lord Brandon citing *The Albazero* (n 57) in respect of the first of these options. [↑](#footnote-ref-194)
194. . For the conditional benefit doctrine in a different context, *Schiffahrtsgesellschaft Detlev von Appen GmbH v Voest Alpine Intertrading GmbH (The Jay Bola)* [1997] 2 Lloyd's Rep 279 (CA). The doctrine applies to all assignments, and requires assignees to take 'subject to equities': eg *STX Pan Ocean Co Ltd v Woori Bank* [2012] EWHC 981 (Comm); [2012] 2 Lloyd's Rep 99, [9] (Flaux J). [↑](#footnote-ref-195)
195. . P Mallon and A Tomlinson (n 145) 263; M Clarke, 'Transport documents: their transferability as documents of title; electronic documents' (n 145) 365; see also n 139. On Bolero, see nn 139-148 and associated text. [↑](#footnote-ref-196)
196. . Commonly done today, in effect at least, with CIF sales in respect of demurrage: eg *OK Petroleum AB v Vitol Energy SA* [1995] 2 Lloyd's Rep 160 (QBD); *Profindo Pte Ltd v Abani Trading Pte Ltd (The MV Athens)* [2013] SGHC 10, [2013] 1 Lloyd's Rep 370 (not, strictly speaking, an indemnity, but performed the same function). See generally C Debattista, 'Laytime and demurrage clauses in contracts of sale — links and connections' [2003] LMCLQ 50. CIF sellers are therefore presumably happy to use the indemnity (or similar) method. It might be different for larger liabilities, such as what would presumably (had it been successful) have been a claim for the loss of the vessel in *Primetrade AG v Ythan Ltd (The Ythan)* [2005] EWHC 2399 (Comm); [2006] 1 Lloyd's Rep 457. Somebody has to take the risk of the holder's insolvency; under the novation model considered next, it is borne by the carrier. On the undesirability of transferring dangerous cargo liabilities in any event, see Treitel (n 57) 347. [↑](#footnote-ref-197)
197. . On the principles in *Obestain Inc v National Mineral Development Corp Ltd (The Sanix Ace)* [1987] 1 Lloyd's Rep 465 (QBD). [↑](#footnote-ref-198)
198. . (1839) 6 Cl & F 600 (HL), explained *The Albazero* (n 57) 843-847 (Lord Diplock); *Alfred McAlpine Construction Ltd v Panatown Ltd* [2001] 1 AC 518 (HL), esp 528-530 (Lord Clyde). The reasons, based on the Bills of Lading Act 1855, for awarding only nominal damages in *The Albazero* itself do not apply to an eBL which falls outside the regime of its successor, the Carriage of Goods by Sea Act 1992: ibid, 847-848. [↑](#footnote-ref-199)
199. . Contracts (Rights of Third Parties) Act 1999, s 1(5) resolves this damages issue, and ss 6(5)-6(7) would not exclude from the operation of the 1999 Act a contract of carriage where an electronic bill of lading was used. Section 6(6)(a) excludes a contract of carriage 'contained in or evidenced by a bill of lading, sea waybill or a corresponding electronic transaction', but s 6(7)(b) provides that 'a corresponding electronic transaction is a transaction within section 1(5) of [the 1992] Act'. This surely implies a transaction in respect of which the Secretary of State has made regulations under s 1(5), the principle being that if it is within the 1992 Act, it should be outside 1999. See further A Burrows, 'The Contracts (Rights of Third Parties) Act 1999 and its implications for commercial contracts' [2000] LMCLQ 540, 550; cf Goldby (n 4) [5.28]-[5.29]; [6.22], who takes the opposite view, but does not cite s 6(7)(b). There is no obvious sense in removing electronic transactions from the operation of the 1999 Act, unless they are brought (by the Secretary of State) within the 1992 legislation. [↑](#footnote-ref-200)
200. . The provision applies only to legal assignments. Equitable assignment (which does not require written notice) would require each assignee to join his predecessor in the chain: see eg the very full discussion in *General Nutrition Investment Co v Holland & Barrett International Ltd* [2017] EWHC 746 (Ch) [32]-[87], rvsd other grounds [2018] EWCA Civ 1586; [2019] FSR 1. Ultimately, therefore, the shipper (as original assignor) would be joined to enforce on behalf of the current 'holder'. Each assignment could require the co-operation of the assignor, but none of this is necessary if electronic forms of notice suffice for a legal assignment. [↑](#footnote-ref-201)
201. . Regulation (EU) 910/2014 on electronic identification and trust services for electronic transactions in the internal market. [↑](#footnote-ref-202)
202. . Section 7 of the Electronic Communications Act 2000 does not apply, being concerned with admissibility in evidence rather than formal validity, and providing for electronic signatures rather than notices. For formal writing requirements at common law, see eg *Goodman v J Eban Ld* [1954] 1 QB 550 (CA); cf *Firstpost Homes Ltd v Johnson* [1995] 1 WLR 1567 (CA); D Faber (n 130) 243, n 25; C Reed (n 96). [↑](#footnote-ref-203)
203. . Since this would be a genuine novation, it would be wise also to require the new holder to provide consideration, eg payment of a nominal fee (unless he otherwise accepted carriage contract obligations): see n 146 and associated text.

The novation would nonetheless be unusual in that both offer and acceptance would be automated, by the essentially mechanical operation of a computer program. The courts certainly allow automated offers: *Thornton v Shoe Lane Parking Ltd* [1971] 2 QB 163 (CA) esp 169 (Lord Denning MR). The problems identified by Chris Reed where there is automated *negotiation* probably do not apply: C Reed, Internet Law: Text and Materials (Buterworths 2000) [6.2.2]. [↑](#footnote-ref-204)
204. . Release of the eBL to the buyer could be against a trust receipt, as now: for an example of a trust receipt, see *Lloyds Bank Ltd v Bank of America National Trust and Savings Association* (n 48) 148. [↑](#footnote-ref-205)
205. . Bolero Rulebook [3.4.1(5)]-[3.4.1(6)]; [3.4.2]; [3.5.2]. [↑](#footnote-ref-206)
206. . CMI Rules for Electronic Bills of Lading (n 6). [↑](#footnote-ref-207)
207. . See nn 121-127 and associated text. [↑](#footnote-ref-208)
208. eg K Takahashi (n 15) 202: 'A blockchain-based bill of lading would not, however, take off unless it is given sufficient support from the legal infrastructure'; also ibid 206, 210. [↑](#footnote-ref-209)
209. Law Commission (n 7) [4.10]; H Beale, L Griffiths (n 7) 478. [↑](#footnote-ref-210)
210. . See generally M Goldby (n 4) [6.65]-[6.128], and for the position in the US, [6.57]-[6.64]. [↑](#footnote-ref-211)
211. . United Nations Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea (2009). See generally Takahashi (n 15) 206-207. I suggest that the Rotterdam Rules are unlikely to become part of English law. [↑](#footnote-ref-212)
212. . Rotterdam Rules, Art 8(b). [↑](#footnote-ref-213)
213. . ie they adopt the principle of technological independence. For some of the difficulties, see UNCITRAL, 'Model Law on Electronic Transferable Records' (2017) Explanatory Note [82]. [↑](#footnote-ref-214)
214. . See nn 80; 125 and associated text. [↑](#footnote-ref-215)
215. . UNCITRAL, Model Law on Electronic Transferable Records at <<https://uncitral.un.org/en/texts/ecommerce/modellaw/electronic_transferable_records>> accessed 13 Nov 2019. Art 7 makes similar provision for transferable records as EIDAS for documents: see n 201. On UNCITRAL generally, Goldby (n 4) [6.75]-[6.85]. [↑](#footnote-ref-216)
216. . On whether an eBL can be described as an electronic transferable record, see Ong (n 1) 12-14. This harks back to the registry/token model debate: n 22 and associated text. Some legislation, including s 1(5) of the Carriage of Goods by Sea Act 1992, assumes a document that moves, in the manner of a pBL, rather than being simply an entry on a register. [↑](#footnote-ref-217)
217. . UNCITRAL Explanatory Note (n 215) [133]. [↑](#footnote-ref-218)
218. . Generally on UNCITRAL's Model Law, see Clyde & Co (n 6) 10-11. [↑](#footnote-ref-219)
219. . See n 22 and associated text. [↑](#footnote-ref-220)
220. . See 176-182 and associated text. [↑](#footnote-ref-221)