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Law and technology: Company law

Hans TIJO

Pey Woan LEE
Singapore Management University, pwlee@smu.edu.sg

Pearlie M. C. KOH
Singapore Management University, pearliekoh@smu.edu.sg

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I. Introduction

1. In this chapter, we discuss areas of company law where technology has already played a part and also predict where it may soon transform legal practice. We focus on shareholder rights, share capital, informational costs, fundraising and artificial intelligence. The central theme, though, is that to prevent statutory obsolescence, laws should be drafted with enough flexibility to accommodate changes in technology. This will allow practitioners the leeway to push on the edge of the envelope and let market forces help in determining the most efficient ways of doing things in a volatile business environment.

II. Shareholder Participation

2. The Companies Act is premised on a shareholder-centric view of the company and its purposes. This translates into strong shareholder participatory and intervention rights which are exercised through the mechanism of the vote. The proper exercise of shareholder votes depends, however, on the shareholders being kept sufficiently informed of the company's operations and affairs. In this connection, technology has and continues to shape and impact the legislative strategies for enhancing shareholder participation.

A. Electronic communications

3. The electronic transmission of notices of meetings[1] and other company documents[2] is explicitly provided for in the Companies Act, a change that was introduced into the Act in 2004.[3] There is, however, nothing in the Act which either permits or proscribes electronic or virtual meetings. At present, the provisions governing shareholder meetings are couched in language that suggests a requirement for *physical* meetings. This raises the question whether a company constitution can alter that apparent position.

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[1] s 387A CA.
[2] s 387 B CA
[3] Section 51 of the Companies (Amendment) Act 2004 (Act 5 of 2004). See further Richard C Nolan, "The Continuing Evolution of Shareholder Governance" (2006) 65 Camb LJ 92.

4. Part of the problem is that it is not always easy to determine if a provision in the Companies Act lays down a mandatory rule, or merely stipulates a default position that may be contracted out of. Certain matters may be better suited to be dealt with through an appropriate inclusion in the Model Constitutions, and yet is explicitly provided for in the main body of the Act. While effecting the changes through a mandatory provision in the Companies Act may have saved companies the trouble of having to amend their articles individually, it also reflects some form of conservatism amongst corporate practitioners in Singapore who take the view that the starting point is that provisions in the Companies Act are mandatory, an attitude that is arguably driven by the general penalty provision found in s 407 CA. A related uncertainty is that concerning matters not explicitly governed by the Act. Ordinarily, one would presume that where the Act is silent, it should allow for derogation. However, the area may also be implicitly covered by other express rules, in which case it does not allow for contracting out.

5. There is some implicit acknowledgement of these issues by the Ministry of Finance, which had, in their 2011 round of consultations to amend the Companies Act, recommended that the electronic communication rules should be "less restrictive and prescriptive".[4] The Ministry had also called for changes to recognise the implied and deemed consent to receipt of electronic communication by shareholders where the articles are drafted accordingly.[5] These recommendations are formally expressed as default positions, with ss 387A and 387B CA[6] continuing to apply if the company's constitution has not been appropriately amended. Nevertheless, the general tenor of these changes confirms the view that most of the provisions in the Companies Act are mandatory unless stated otherwise.

6. The Report of the Companies Act Working Group issued in May 2019 ("CAWG Report") has since confirmed this by suggesting widespread changes to the Act to allow for digitalisation of communications, amongst other things. Specifically, it suggested the retention of sections 387A-C for communications from the company or its directors to its members, officers or auditors but to

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[4] Ministry of Finance, *Public Consultation on the Report of the Steering Committee for Review of the Companies Act* (June 2011) ("MOF Consultation 2011"), Recommendation 2.18.
[5] MOF Consultation 2011, Recommendation 2.19.
[6] This was inserted by the Companies (Amendment) Act 2014 (Act 36 of 2014).

allow other forms of communications in the reverse situation or with respect to third parties to be governed by agreement.[7] Although framed in terms of the need for enabling provisions to be inserted in the Act, where relevant, this continues to give the impression that legislation is required to permit the use of the electronic medium. This may then in turn lead corporate actors to rely too much on the statute.

7. Technology may supply a plausible option that respects the contractarian premise of the constitution[8] and yet allows ACRA to take the lead in guiding change. Since 2015, under the new section 37 of the Companies Act, a company which has opted to adopt the Model Constitution for a Private Company Limited by Shares may choose to either adopt the specific version that was in force at the point of incorporation, or one that varies with the version that may be in force from time to time. Through the use of technology, the corporate constitutions of those companies choosing to have the "evolving" Model Constitution may be directly linked to the latest version of the Model Constitution, such that any changes to the Model Constitution introduced by ACRA would be displayed immediately. For many small companies, this would save on monitoring costs to ensure that their directors and shareholders have amended the constitution where necessary and reduce information costs for third parties dealing with them who would see the changes immediately upon ACRA amending the Model Constitution. The advantage of fuller delegation and simply adopting default charters which incorporate State amendments to them has been examined in some detail in other parts of Asia.[9]

B. Digital meetings and e-voting

8. Technology may also facilitate shareholder participation by enabling remote voting. A significant step in that direction is the transition from physical to digital meetings. This has already occurred with the enactment of Part IV of the Covid-19 Act, which specifically allows companies to hold

[7] CAWG recommendation 1.9 to 1.11.
[8] Our Companies Act has its roots in English legislation, which has been said to have been more contractarian at inception than US corporate legislation. David Kershaw, *The Foundations of Anglo-American Corporate Fiduciary Law* (Cambridge University Press, 2018) Pt III.
[9] Lauren Yu-Hsin Lin and Yun-chien Chang, "An Empirical Study of Corporate Default Rules and Menus in China, Hong Kong and Taiwan" (2018) 15 JELS 875.

digital meetings (including electronic voting) to comply with restrictions designed to curb the spread of the pandemic. Although these are intended as temporary measures, it is likely that digital (or a hybrid of physical and digital) meetings are here to stay given the CAWG's recommendation to amend the Companies Act to allow companies to hold meetings digitally and in more than one location.[10] The experience gained from the conduct of meetings during the pandemic season is only likely to fortify the development.[11]

9. Admittedly, Singapore is a relative latercomer in this area of reform compared to other jurisdictions. India, for example, has had provisions allowing for postal voting since 2001[12] and has subsequently also made e-voting a mandatory option for listed companies.[13] By contrast, listed companies in Singapore continued to vote by way of a show of hands despite suggestions otherwise in the Code of Corporate Governance and voting by poll was only mandated by the introduction of various regulatory changes aimed at enhancing shareholder engagement in the Listing Rules.[14]

10. It is likely, though, that there were security concerns with e-voting, which may be ameliorated with the advent of blockchain technology. As is discussed in chapter 2 in this volume, this is a distributed ledger technology that does not require third party verification that enables secure recording of facts or digital information which is then packed away in a public database. Its relevance in the context of corporate law is that it could facilitate the formation, recording and verification of transactions without the use of third-party intermediaries, resulting in substantial

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[10] CAWG Report, Recommendation 1.3. The government had in fact expressed support for this development prior to the advent of Covid-19: see the speech of Second Minister of Finance Ms Indranee Rajah at MOF Committee of Supply Debate 2019, para 87.

[11] "Singapore Open to Virtual Shareholder Meetings Post-Covid-19: MAS", *The Straits Times*, 20 October 2020.

[12] S 192A Companies Act 1956 made provisions for postal voting but also envisaged the possibility of e-voting subsequently.

[13] In June 2014, the Ministry of Corporate Affairs made e-voting mandatory for the top 500 listed companies (based on market capitalisation). Soon after, in October 2014, the Securities and Exchange Board of India mandated the e-voting option for all listed companies, improving shareholder participation in the voting process. See also Umakanth Varottil, "The Advent of Shareholder Activism in India" (2012) Journal of Governance 582, at 595 – 598.

[14] In 2012, the Code of Corporate Governance (Guideline 16.5) was amended to recommend voting by poll and to encourage electronic voting. SGX listing rules were also amended in 2014 and 2015 to require both SGX Mainboard and Catalist companies and trust to: (i) hold general meetings in Singapore or provide alternative arrangements like webcasts; (ii) vote on all resolutions by poll; (iii) appoint independent scrutineers to supervise voting and (iv) disclose details on voting results promptly after general meetings: see Rule 730A(1) and Practice Note 7.5.

cost savings. Indeed, it has already been used worldwide and in Singapore in recording board voting and resolutions[15] as there are no mandatory provisions against the adoption of technology for these purposes.[16]

III. Share certificates, transfers and registers

A. Share certificates and dematerialisation

11. Dematerialisation of securities[17] is precipitated chiefly by concerns of certainty and security but it is no doubt also a phenonmenon made possible only by advances in computer technology. In Singapore, the Companies Act requires both private and public companies to issue physical share certificates as evidence of title.[18] In the case of listed companies, the certificates are immobilised with the CDP which formally becomes the member of the listed company. In 2011, the Steering Committee for Review of the Companies Act (the "Steering Committee") recommended that shares of public companies should eventually be dematerialised but did not ultimately mandate such requirement.[19] No changes were therefore made to that effect in the Companies (Amendment) Act 2014, with the result that listed shares continue to be immobilised but not dematerialised. In its most recent round of recommendations, however, the CAWG has recommended that the Companies Act be amended to enable companies not to have share certificates.[20] This would allow for complete dematerialisation where a company chooses to dispense with physical share certificates. Such a development would, if it materialises, be in line with our view that statutes should be drafted with flexibility for technological growth. When blockchain technology becomes more widely available, it is conceivable that shares would be even

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[15] This is implicit in the CAWG Report at p 18.

[16] Although, even here, the CAWG's recommendation was that there be "an enabling provision which clarifies that nothing in the CA prohibits board meetings from being held digitally": CAWG Report, recommendation 1.5.

[17] Generally understood as the replacement of physical certificates with credit entries in a register.

[18] See s 123 & 130AE CA.

[19] MOF Consultation 2011, Recommendation 3.15. By contrast, all securities (regardless of when they were issued – with issued securities from 2023) that will be traded on capital markets in the EU will be dematerialised from 2025: EU Central Securities Depository Regulation (909/2014).

[20] CAWG Report, Recommendation 1.1. In 2004, further significant amendments had to be made to the Act to allow it to cover, for example, fully dematerialised securities: see eg s 22 of the Companies (Amendment) Act 2004 (Act 5 of 2004), which amended the previous s 130B(1)(*b*) CA (now s 81SG(1)(*b*) SFA) to apply the book-entry regime to "designated securities". This is a useful example of legislative change to prevent statutory obsolescence as such securities were not envisaged in Singapore when the legislation was enacted in 1993.

more readily dematerialised given the permanence, security and convenience of the platform. We believe that the process will be graduated, with the shares of listed public companies first to be dematerialised, followed by unlisted public and private companies with underlying tech business.

B. Share Transfers

12. Blockchain technology, with its touted security and immutability capabilities, can be applied to share transfers and registers to improve transparency of transactions and maintain the integrity and accuracy of relevant information.

13. There have always been cases of fraud and mistakes with the use of physical share certificates and transfer forms.[21] For companies listed on the SGX, however, transfer forms have not been necessary since scripless trading commenced in 1993. Scripless trading and the creation of the CDP enabled transfers to be effected electronically,[22] largely eliminating the need for the movement of physical share certificates and transfer forms.

14. The next step, then, may be for share transfers in private companies to become fully electronic as well. Section 126 CA provides that a transfer of shares in a private company is to be carried out by the lodgement of a "proper instrument of transfer" with the company. Since the coming into force of the Companies (Amendment) Act 2014, however, the private company is required to lodge a notice of transfer pertaining to any transfer of its shares with the Registrar.[23] No transfer of shares in a private company can take effect until the electronic register of members of the company that is maintained by the Registrar is updated under section 196A(5).[24]

15. In theory, it should be possible to devise a blockchain technology enabled system to administer the share transfers of both private and public companies. However, such a development is complicated by two related company law features. First, in relation to private companies, share

[21] See eg *Pan-Electric Industries Ltd v Overseas-Chinese Banking Corp Ltd* [1994] 1 SLR(R) 185.
[22] CDP is only obliged to send a confirmation note to the buyer and seller: see the former section 130I of the Companies Act (Cap 50, 1994 Rev Ed), now section 81SL of the Securities and Futures Act (Cap 289, 2006 Rev Ed) ("SFA").
[23] s 126(2) CA.
[24] s 126(3) CA. CAWG has recommended that ACRA should consider keeping the register of members for non-listed public companies using dematerialised shares (Recommendation 1.2).

transfers are subject to restrictions so that such transfers cannot usually be perfected by mere registration without the company's input. Second, share registers (for both private and public companies) are currently designed to recognise only legal but not equitable interests. As such, transfers effected only in equity are currently not captured in the register. In combination, these features explain why the current share registers do not reflect the full ownership of shares. Should share transfers be digitalised using blockchain technology, the system could be differently conceived to reflect beneficial ownership. Such a development would have the benefits of according share rights to beneficial owners, and also puting prospective share purchasers on notice of interests affecting the share. This has to be carefully thought through as it would impact on traditional property concepts like bona fide purchase, and may not in fact be what the parties want. The discussion that follows will elaborate on the features that constrain the current system before outlining the contours of the suggested blockchain system.

(1) Restrictions in share transfers

16. It is trite that a private company is distinguished from a public one by the fact that it is statutorily mandated to restrict the transfer of its shares.[25] Closely held companies require this power to restrict the members of the company, without which they may lose their status as private companies.

17. Transfer restrictions may take the form of pre-emption provisions, or arguably more commonly, the board is vested with the discretion to refuse to register a share transfer. When directors decline to register a transfer, they must notify the transferee of the refusal and provide a statement setting out the facts which justified the refusal.[26] The reasons given by directors when exercising their discretion not to register the shares of a transferee will be subject to scrutiny by the court.[27] The power given to directors in this regard is a fiduciary one to be exercised in the best interests of the company, and not for any collateral purpose.[28] The onus of proof is on the

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[25] s 18 CA.
[26] s 129 CA.
[27] *Xiamen International Bank v Sing Eng Pte Ltd* [1993] 2 SLR(R) 176.
[28] *Re Smith & Fawcett Ltd* [1942] Ch 304, affirmed in *HSBC (Malaysia) Trustee Bhd v Soon Cheong Pte Ltd* [2007] 1 SLR(R) 65.

transferee who seeks to have the shares delivered to him to show bad faith on the part of the directors,[29] or that the directors acted in their own interests and without a rational basis to reject the share transfer.[30] This scrutiny of directors' power over share transfers is a recognition of the countervailing need to make shares as close to property as possible. Shares in private companies cannot be freely transferrable yet they must still be *generally* transferrable or they would cease to be property. It follows that restrictions on share transfers ought, in general, be narrowly circumscribed.[31]

18. Nevertheless, the conferral of directorial discretion to refuse registration of share transfers shows that the company's intervention is required to perfect shares transfers, which are not, therefore, purely administrative acts. If so, shares cannot be assigned in the same way as a normal chose in action (such as an unreified debt[32]). Instead, the common law basis for perfected share transfers should be a form of novation, with registration being evidence of consent by the company to the new contract.[33]

(2) Beneficial ownership

[29] *HSBC (Malaysia) Trustee Bhd v Soon Cheong Pte Ltd* [2007] 1 SLR(R) 65 at [20], *per* Judith Prakash J.

[30] *Xiamen International Bank v Sing Eng Pte Ltd* [1993] 2 SLR(R) 176.

[31] Courts are cognisant of this constraint. In *Dennis Foo Jong Long v Ang Yee Lim Lawrence* [2016] 2 SLR 287, the High Court held that shares were property rights and hence any restriction such as a pre-emption right had to be construed narrowly and may not have been breached by a highly qualified sale or transfer of shares. See also *Pacrim Investments Pte Ltd v Tan Mui Keon Claire* [2008] 2 SLR(R) 898. It has also been argued that the price of incorporation is the giving up of control even with private companies: see David Milman, *The Company Share* (Edward Elgar, 2018) at 165-66.

[32] Which, on one analysis, is a bare trust with a limited agency: see Chee Ho Tham, *Understanding the Law of Assignment* (CUP, 2019).

[33] See Robert Pennington, *Pennington's Company Law* (LexisNexis, 8th Ed, 2001) at p 399, discussing the position of the transferee of shares in a deed of settlement company and before the advent of limited liability. The requirement for novation highlights the fact that shares do not only denote rights but obligations as well: see *Re National Bank of Wales; Taylor, Phillips and Rickards' Cases* [1897] 1 Ch 298 at 305. See also *Borland's Trustee v Steel Bros & Co Ltd* [1901] 1 Ch 279. See DavidMilman, *The Company Share* (Edward Elgar, 2018) Ch 6. There may be examples of pre-approved novations that appear to take the form of unilateral transfers of obligations: Kwan Ho Lau, "Unilateral Transfers of Contractual Obligations" (2013) 129 LQR 491, discussing *Giuffrida Luigi v Julius Baer (Singapore) Ltd* [2010] SGHC 96. In the UK, see *Mulkerrins v Price Waterhouse Coopers (a firm)* [2003] UKHL 41, discussed in Chee Ho Tham, *Understanding the Law of Assignment* (CUP, 2019) at 16. See now *Ma Hongjin v SCP Holdings Pte Ltd* [2020] SGCA 106.

19. Equitable rights cannot be registered with the company as a general rule as s 195(4) CA provides that a company shall not be affected by notice of any trust express, implied or constructive.[34]

20. This creates problems for beneficial owners, as the Companies Act tends to recognise only membership (legal) rights and give standing to such. The general lack of standing suffered by beneficial owners of shares is expressly addressed only in a few instances, such as with the statutory derivative action in section 216A of the Companies Act, which provides that other than members, the action can be initiated by "any other person who, in the discretion of the Court, is a proper person to make an application under this section".[35] In other areas, however, the Act has expressly excluded beneficial owners. For example, s 210 CA – which concerns schemes of arrangements – was amended in 2014 to include holders of units of shares. However, the amendments also clarified that such holders exclude persons who only hold these units beneficially.[36] The English High Court has recently noted that excluding beneficial owners in this context could disenfranchise large groups of individual shareholders investing through funds and nominees, thereby raising a "genuine issue about shareholder democracy".[37] Bruner has argued that "(d)istributed ledgers and blockchain technology might alter this landscape for the better"[38] but that in the end much is still guided by what the corporate purpose might be.

(3) A blockchain solution?

21. That last point shows that what can be done in law and practice is not just a function of technology. Company law, and its various constituents, have values which determine how things are or ought to be. That said, technology can make some equitable rights more meaningful in

[34] *Look Chun Heng v Asia Insurance Co Ltd* [1952] MLJ 33. This is unlike land titles registration where a caveat can be lodged to protect equitable interests.
[35] s 216A(1)(*c*) CA. The CA has also been amended in 2017 to require both Singapore-incorporated and foreign companies to maintain information on beneficial ownership of persons who are registrable controllers: see Part XIA CA. But all of this is for record keeping of controlling interests required by the Financial Action Taskforce and not for providing greater security to share transfers in private companies.
[36] See s 210(11) CA.
[37] *In the Matter of Sirius Minerals Plc* [2020] EWHC 1447 (Ch) at [6]. In this context, however, CAWG recommendation 1.12 was that the Companies Act should not be amended to address, *inter alia*, whether and how court-ordered meetings under section 210 may be held digitally.
[38] Christopher M Bruner, "Distributed Ledges, Artificial Intelligence and the Purpose of the Corporation" (2020) 79 Camb LJ 431 at 435.

practice.[39] It is tentatively suggested here that a system close to a land titles system (which also captures equitable interests) with characteristics of substantial shareholder disclosure for listed companies (which captures direct and deemed interests) could work in a blockchain-based system. So, while a private company share transfer may still require director approval for completion, the approval should be assumed, such that the register (reflecting the completed share transfer) would only be rectified if an objection is successfully made. Importantly, such a system will in effect record beneficial rather than the legal ownership of shares, but elevate such persistent interests (said to be "a right against a right" in the case of equitable interests under a trust[40]) even if they may not be fully proprietary. These interests are intermediate rights, which arguably lie between contract and property, or whose proprietary characteristics only show in certain contexts. Such rights require either mandatory rules or disclosure in order to garner greater acceptance from third parties intending to deal with them, protection from those seeking to damage them or avoidance from those indifferent to them (an argument which will be made for tokens below).

22. It is not clear, however, that this is in fact what the market (other than technophiles) want. There are shareholders who want to remain anonymous (which they can if they hold less than 25% in a private company[41]). A way has to also be found to rationalise this blockchain-based system with the Registrar's electronic register of members as well as the company's own register of registrable controllers. It might have better usage with problems of indirect share ownership in listed companies. Indirect investors are those who hold shares through nominees and are therefore unable to attend shareholder meetings except as proxies of their nominees. In 2011, the Steering Committee recommended that indirect investors be given the right to participate in and vote at general meetings by allowing financial institutions acting as nominees to appoint multiple proxies

[39] This is linked to suggestions for use of technology to empower investors and mitigate problems of collective action: see Pearlie Koh, "Shareholder Empowerment in the Digital Age" in Andrew Godwin, Lee Pey Woan, Rosemary Langford (eds), *Technology and Corporate Law: How Innovation Shapes Corporate Activity* (forthcoming (Edward Elgar, 2021)). This concern may be even more acute for creditors: Marissa Lee, "Bond holders of trouble firms turn on trustee" *Straits Times* 8 October 2016.
[40] *Ernest Ferdinand Perez De La Sala v Compañia De Navegación Palomar, SA* [2018] 1 SLR 894, citing Ben McFarlane and Robert Stevens, "The Nature of Equitable Property" (2010) 4 Journal of Equity 1. This is discussed further by Hans Tjio, "Merrill and Smith's intermediate rights lying between contract and property: are Singapore trusts and secured transactions drifting away from English towards American law?" (2019) SJLS 235.
[41] A shareholder with more than 25% interest in a company would be a registrable controller whose interests must be registered and disclosed by the company under Part XIA Of the Companies Act.

under the (now amended) section 181,[42] but it did not support changes to allow indirect investors to enjoy or exercise memberships rights more generally.[43] A blockchain enabled system could, we suggest, resolve this issue by granting indirect investors access to general membership rights. But this may not address continued shareholder apathy[44] or, in a recent example in Singapore, the entity itself may choose not to recognise indirect investors via multiple proxies through amendments to its own constitution.[45]

IV. Capital (Record keeping and information repository)

23. The blockchain-based share transfer system would also be able to improve accounting practices and provide dynamic balance sheets capturing paid-in capital more accurately as it records financial transactions in real-time. This is needed because there is increasingly a practice with private companies for shareholders to inject funds into a company without increasing the number of shares they own. At present, the balance sheet will not capture the change until the end of the financial year. In this regard, the Privy Council in *Kellar v Williams*[46] has held that English company law[47] permitted an existing shareholder to at any time pay money to a company in order to swell the share capital of the company without the issuance of new shares if this was what the shareholders had agreed.

24. Importantly, the Privy Council also expressly rejected the argument that, as creatures of statute, the capital structure of limited liability companies could only operate strictly within the statutory framework.[48] The statute is not exhaustive in itself, and there is nothing in company law which prevents the addition of new shareholder funds (or even the capitalisation of profits) by increasing share capital without the issuance of new shares, particularly where the corporate

[42] MOF Consultation 2011, Recommendations 2.10 and 2.11.
[43] MOF Consultation 2011, Recommendation 2.13.
[44] Christopher M Bruner, "Distributed Ledges, Artificial Intelligence and the Purpose of the Corporation" (2020) 79 Camb LJ 431 at 452.
[45] Anita Gabriel, "Activist funds opposed to Sabana-ESR merger slam one-proxy rule" *Business Times* 1 December 2020.
[46] [2000] 2 BCLC 390.
[47] And that of the Turks and Caicos Islands, where the appeal originated from.
[48] *Kellar v Williams* [2000] 2 BCLC 390 at 392(g) and 395(f).

constitution permits it.[49] In Singapore, the Ministry of Finance adopted a similar view when it declined to amend the Companies Act in a manner that implied an increase in capital would always be accompanied by an issue of new shares.[50] Even more recently, however, CAWG's recommendation 5.1 was to amend section 71 to expressly allow the directors of a company to alter the share capital of the company by increasing its share capital or capitalising its profits, *without* issuing new shares, and without the need for an ordinary resolution approving the alteration. While this helps clarify the law, it adds to one of the themes of this chapter, which is that we sometimes overlook the contractarian basis of our Companies Act, which then has ramifications for the growth of corporate practice here. Somewhat conversely, Recommendation 5.2 is that the Act need not be amended to clarify that a company may reduce share capital and return such capital to its shareholders without cancelling issued shares.

25. There is therefore space for a blockchain-based system to capture a company's balance sheet and particularly its share structure on a real time basis. This will help with capital maintenance, which are rules, as Menon CJ noted in *The Enterprise Fund III Ltd v OUE Lippo Healthcare Ltd*,[51] both to maintain capital and preserve assets. Given that so much depends on the solvency test in section 7A of the Companies Act, as well as the increasing use of provisions governing transactions defrauding creditors even with, eg, lawful dividend payments[52], such ledgers may become vital. A

[49] Eilis Ferran, *Principles of Corporate Finance Law* (Oxford University Press, 2008) at p 123 points out that this is still something not expressly envisaged by the English Companies Act 2006 (c 46) so that "there is no specific statutory obligation requiring the filing of a statement of capital when capital is invested in this way". Compliance with accounting standards should be sufficient in this regard. As to the relationship between provisions in the Malaysian Companies Act 1965 (No 125 of 1965) and the articles of association of a company, see *Indian Corridor Sdn Bhd v Golden Plus Holdings Bhd* [2008] 3 MLJ 653.

[50] In 2011, the Steering Committee had recommended that section 71(1)(*a*) of the Companies Act be re-enacted to clarify that an issue of new shares constitutes an alteration of capital, and that section 63 be amended so that a company is required to lodge with the Registrar a return whenever there is an increase in share capital regardless of whether it is accompanied by an issue of shares: MOF Consultation 2011, Recommendation 3.38. Rejecting this recommendation, the Ministry noted that accounting share capital is only reported in financial statements that are prepared at the end of the financial year and no filings were required at the time of increase in share capital. The amendment was also unattractive as it would increase business costs: see *Ministry of Finance's Responses to the Report of the Steering Committee for Review of the Companies Act* (October 2012) at para 131.

[51] In *The Enterprise Fund III Ltd v OUE Lippo Healthcare Ltd* [2019] 2 SLR 524 at [53] in the context of the prohibition of share repurchases. It has also been so noted regarding the prohibition against a company giving financial assistance for the acquisition of its shares: *Public Prosecutor v Lew Syn Pau* [2006] SGHC 146 at [92]. In the latter case, Menon JC (as he then was) introduced a depletion of assets test for financial assistance. See further Michael Ewing-Chow and Hans Tjio "Providing Assistance for Financial Assistance" [2006] Sing JLS 465.

[52] *BTI 2014 LLC v Sequana SA* [2019] EWCA Civ 112. The appeal to the Supreme Court was heard in March 2020 and provisionally adjourned to May 2021.

leading US casebook has stated that the "main characteristic of these capital maintenance rules is that they accelerate the point at which failing companies must file for insolvency", which explains perhaps why the US, without such rules, has had so many companies lacking Covid-19 resilience.[53] Although it has been argued that the UK is only now getting things right with further liberalisation as capital is only risk-weighted for financial firms,[54] better data capture and analysis for other companies creating systemic risks[55] can help in preventing the default shocks we have seen with industrial and trading companies like Hyflux and Hin Leong.

V. Reducing information costs for third parties dealing with a company and its agents

26. In *Enterprise Fund*, a case concerning the unlawful purchase of a company's own shares, the Court of Appeal also rejected[56] the argument, based on some form of "indoor management rule", that the Crest fund (a third party dealing with the company) was entitled to believe that the repurchasing company had whitewashed the transactions under ss 76C to 76G of the Companies Act. These provisions allow a share repurchase under stipulated conditions and with the necessary shareholder/creditor approvals. This is in line with the Privy Council's decision in *East Asia Company Ltd v PT Satria Tirtatama Energindo,*[57] which recently held that the indoor management rule was not so powerful as to obviate the need for some form of apparent authority before it could be invoked.[58] Accordingly, there is no room for the indoor management rule to apply if there was nothing (or not enough representation) for the third party to rely on in the first place. This is the opposite of being put on inquiry in that the third party must have some representation to pin its belief on before a presumption of regularity can arise. Crucially, however,

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[53] William T Allen and Reineer Kraakman, *Commentaries and Cases on the Law of Business Organization* (Aspen, 5th ed, 2016) at 4.2.3.

[54] Eilis Ferran, 'Revisiting Legal Capital' (2019) 20 European Business Organization Law Review 521 (good reasons other than Brexit to do so) at 528.

[55] Gerard Hertig, "Centros@20: Making Legal Capital Relevant: Some comments on Eilis Ferran's 'Revisiting Legal Capital" Oxford Business Law Blog 30 September 2019.

[56] *The* Enterprise *Fund III Ltd v OUE Lippo Healthcare Ltd* [2019] 2 SLR 524 at [123].

[57] [2020] 2 All ER 294, noted Hans Tjio and Daniel Ang, "No Magic to the Indoor Management Rule" [2020] LMCLQ 217.

[58] See *OBG Ltd v Allan* [2007] UKHL 21 at [92] where Lord Hoffmann said that: "As Lord Simonds went on to point out in *Morris v Kanssen* [1946] AC 460, such a person can rely on the principle of ostensible authority which in company law goes under the name of the rule in [*Royal British Bank v Turquand*]".

in cases of apparent authority and the indoor management rule, the burden of proof is on the third party to show the existence of the agreement or the possibility of such.

27. The issue is particularly complicated in the company law context because companies can only operate through the intermediation of agents. An agent lowers transaction costs but the problem arises where the agent exceeds its authority and there are conflicting claims between the principal and the third party.[59] One of the balancing strategies is to use a "least-cost avoider"[60] approach to determine whether a principal should be bound to a third party despite the agent's wilfulness – the principal should, if it was far easier for him to have policed the agent's actions. Enforcement is thus selective because a blanket rule imposing liability on the principal would create incentive problems. On the other hand, if the third party knew or had been put on inquiry or, more contentiously, where the cost of determining the extent of the agent's authority was in fact cheaper for the third party to bear, then the principal ought not to be bound. Technology clearly affects that balance as it can at the same time make the monitoring of agents more effective but yet reduce for third parties the costs of ascertaining the truth of the appearance of authority. In this connection, Armour and Whincop thought that "it seems likely that the overall costs of the system would perhaps be reduced by a corresponding shift to allocate greater responsibility to third parties."[148] If this step is taken, resort to technology may be required in order to give third parties a chance to ameliorate the risks inherent in these three-party situations.

28. Again, blockchain can help in this context by supplementing the applicable existing public registers. We are not in a position to determine what additional registers will come about; that should be driven by market demand. It is not about constructive notice, but the burden of proving the absence of actual knowledge that is relevant. We have seen it play its part in the context of company charges (of which subsequent creditors have constructive notice once registered) and its optional extras like negative pledges (of which there is no constructive notice but there may be

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[59] John Armour and Michael J Whincop, "The Proprietary Foundations of Corporate Law" (2007) 27 OJLS 429, 441-2.

[60] John Armour and Michael J Whincop, "The Proprietary Foundations of Corporate Law" (2007) 27 OJLS 429, 446-7.

actual knowledge inferred from the lack of inquiry).[61] *Goode and Gullifer*[62] have pointed out that some form of apparent authority is at play in situations where a third party purchaser may acquire an interest in the collateral free of the floating chargee's interest. But having more information available may paradoxically reduce the application of the doctrine of apparent authority since that makes it less likely that there can be the appearance of authority that a third party can safely rely upon. It will drive apparent authority back to its roots in requiring a clear representation from the principal as to the agent's authority, as opposed to hard modern cases that turn on silence, course of dealing or in effect some form of estoppel by negligence.

VI. New forms of fundraising and collateral

29. Technology has also helped with alternative financing solutions such as crowdfunding. Both debt and equity crowdfunding rely to a large extent on platforms for issuers to reach and also to safeguard investor interests. These platforms are required to be licensed by the Monetary Authority of Singapore ("MAS") and are expected to perform various duties, including conducting due diligence on issuers, instituting policies to handle issuer defaults, and complying with advertising rules.[63] However, these platforms tend to pass on regulatory costs to issuers, and charge high fees. Hence, crowdfunding has simply changed the middlemen from underwriters and issue managers to platforms often set up by financiers.

30. Blockchain can and has, however, allowed issuers to reach investors directly and to provide additional sources of funding for SMEs. Such fundraising activities now commonly take the form of Initial Coin Offerings ("ICOs"), which involve the sale of digital tokens that may be classified as payment, utility and asset tokens.[64] Payment tokens are essentially cryptocurrencies. Utility tokens grant purchasers digital access to goods and services, while asset tokens confer participatory rights in the issuers' underlying business and assets, hence analogous to equity, debt

[61] *Kay Hian & Co (Pte) Ltd v Jon Phua Ooi Yong* [1988] 2 SLR(R) 439 but see *Malayan Banking v ASL Shipyard Pte Ltd* [2019] SGHC 61, following *Wilson v Kelland* [1910] 2 Ch 306.

[62] Roy Goode and Louise Gullifer, *Goode and Gullifer on Legal Problems of Credit and Security* (Sweet & Maxwell, 6th ed, 2018) at 5-02.

[63] See MAS, 'Controls and Disclosures to Be Implemented by Licensed Securities-Based Crowdfunding Operators' Circular No. CMI 27/2018. For the first person to be imprisoned for not obtaining a capital markets services licence under s 82 SFA, see *Public Prosecutor v Nancy Tan Mee Khim* [2020] SGDC 230.

[64] Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs), Swiss Financial Market Supervisory Authority FINMA, 16 February 2018.

and other security assets. The proliferation of ICOs in recent years has sparked concerns about how they should be regulated.

31. Singapore has seen a hive of ICO activities since its emergence as a novel form of fundraising. Out of the worldwide 211 ICOs in 2017, 20% of that took place in Singapore raising about US$790 million according to the Association of Cryptocurrency Enterprises and Startups (Singapore), making Singapore the third largest ICO jurisdiction in the world.[65] Prior to MAS's recent clarifications, the issuance of tokens was largely unregulated as tokens were thought to be like bearer coins, where the focus was not on the underlying asset they represented. This perception suited token issuers, who would avoid or try to avoid prospectus disclosure as that is either too costly or they fear they cannot comply with it.

32. In November 2017, however, MAS issued a Guide to Digital Token Offerings ("Guide to Digital Token Offerings")[66] This stated that "digital tokens that constitute capital markets products" will have to comply with the offering requirements of the Securities and Futures Act, including the need to prepare a prospectus, although the offerors can avail themselves of the exclusions and exemptions there, the most important of which are offers to accredited investors and the $5 million small offer exception. This statement concerned offers of digital tokens in the primary market that represent underlying securities, for which a great deal of concern has been voiced recently in terms of their financial risks,[67] as well as link to illegal activity.[68]

33. The Guide to Digital Token Offerings makes clear that utility tokens do not amount to capital markets products as they do not generally bear the substantive traits of a share, debenture, a unit in a business trust, a securities-based derivative contract, or a unit in a collective investment scheme ("CIS"). However, both utility and asset (or security) tokens are potentially tradable on blockchain-settled systems. It has therefore been argued that regulation is needed to turn these

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[65] Shiwen Yap, 'Singapore Emerges as Third Largest Global ICO Hub - DealStreetAsia' <https://www.dealstreetasia.com/stories/singapore-emerges-asia-ico-hub-86574/> accessed 20 June 2019.
[66] MAS, 'A Guide to Digital Token Offerings', last updated on 26 May 2020.
[67] See, eg, Dirk A Zetzsche, Ross P Buckley, Douglas W Arner and Linus Föhr, "The ICO Gold Rush: It's a Scam, It's a Bubble, It's a Super Challenge for Regulators" (January 9, 2018). University of Luxembourg Law Working Paper No. 11/2017. Available at SSRN: https://ssrn.com/abstract=3072298. But contrast Lars Hornuf, Theresa Kuck and Armin Schwienbacker, "Initial Coin Offerings, Information Disclosure and Fraud", Oxford Business Blog 10 January 2020.
[68] Sean Foley, Jonathan R Karlsen and Tālis J Putniņš, "Sex, Drugs, and Bitcoin: How Much Illegal Activity Is Financed Through Cryptocurrencies?" (January 15, 2018). Available at SSRN: https://ssrn.com/abstract=3102645.

technology assets into stronger proprietary assets where the focus is not on the notional token but the underlying dematerialized asset that it represents.

34. Based on the Guide to Digital Token Offerings, only asset (or security) tokens bearing the substantive features of capital markets product are regulated by the SFA. However, the categories of payment, utility and asset (or security) tokens are not mutually exclusive so hybrid tokens are possible. If a token has some characteristics of a capital markets product, that should be enough to require its regulation. As such, it is better to refer to them as digital assets rather than tokens.

35. Digital assets could be caught by the CIS definition[69] where the effect or purpose of the scheme is to obtain economic benefits, particularly since the current definition has reduced the need for the collective nature of the scheme, making the pooling requirement an alternative rather than a concurrent requirement.[70] MAS has acknowledged this in its update to the Guide to Digital Token Offerings in November 2018, but also said that the *SEC v Howey*[71] test used in the US does not apply in Singapore (this was not in the initial Guide). Perhaps this was because US securities as an "investment contract"[72] can be interpreted more widely than a CIS, and so most digital assets in the US are seen as securities when this may not be the case in Singapore. Here, digital assets would only be seen as securities if they have characteristics of a voting share or a unit trust where the underlying assets of the trust are themselves securities or real estate.[73]

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[69] s 2 SFA.

[70] Under s 2 SFA, the definition of a CIS states that it is an arrangement where, inter alia, (a) the property is managed as a whole by or on behalf of a manager; or (b) the contributions of the participants and the profits or income out of which payments are to be made to them are pooled. The latter pooling requirement is thus one characteristic of the CIS but is not essential if the other alternative in (a) is present.

[71] 328 US 293 (1946).

[72] SEC, Framework for "Investment Contract" Analysis of Digital Assets (modified 3 April 2019) <https://www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets>. The focus there is more on the expectation of benefit as opposed to actual benefit: see Adrian McCullagh and John Flood, "Treasury Consultation Paper on ICOs in Australia, The Technology, The Market, and The Regulation of ICOs" February 2019 at paras 39-43. In Singapore, the CIS definition in the Securities and Futures Act requires the scheme to have the effect or purpose of returning economic benefit.

[73] Grace Leong, "MAS warns coin offering issuer over Securities Act breach" *Straits Times*, 25 January 2019.

36. Only countries like Malaysia[74] have clearly come out to say that all tokens are securities from January 2019, although the practice in the US is also to subject even many utility tokens to regulation, which may explain why ICOs have become less popular since that point in April 2019. It has been argued that Singapore has been more liberal in its regulatory approach as it hopes to provide greater possibilities for financial inclusion and fundraising for SMEs, half of which have no or inadequate bank financing.[75]

37. Nevertheless, some form of regulation is both necessary and desirable to enable SMEs to truly benefit from digital asset offerings. Such regulation serves at least three main purposes. Firstly, it helps protect investors from fraudulent issuers. This is a material risk as there is invariably significant information asymmetry between token issuers and investors. Secondly, regulation, if properly designed, has potential to help worthwhile businesses to distinguish themselves from the bad. At the moment, even if a worthy start-up seeks to issue digital assets to finance its business, it is likely to be crowded out by other issuers with nothing more than a white paper for their putative technology or business plans. Thirdly, regulation is likely to benefit the digital asset industry by establishing a set of standardized rules that apply to digital assets, thereby reducing the information costs that investors and other interested parties have to incur when dealing with them. As Merrill and Smith have posited, when a right affects a large and open-ended class of third persons, "legal rules must be designed so as to minimize the information-cost burden imposed on a great many persons beyond those who are responsible for setting up the right."[76]

38. The disclosure of information or standardisation of rules associated with such regulation will reify digital assets somewhat so that they increasingly become seen as intermediate interests even if not fully proprietary. This will allow them to be used as collateral themselves for loans, and also facilitate their secondary trading. Part of the work needed to allow technological interests to

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[74] Securities Commission, Capital Markets and Services (Prescription of Securities) (Digital Currency and Digital Token) Order 2019.

[75] Hans Tjio and Ying Hu, "Collective Investment: Land, Crypto and Coin Schemes—Regulatory 'Property'" (2020) 21 EBOR 171.

[76] Thomas W Merrill and Henry E Smith, "The Property/Contract Interface" (2001) 101 Columbia Law Review 773, 802.

become "emergent property"[77] would involve coming up with the necessary rules, for "an intangible asset only exists because the law says it does"[78]. Those rules will require notice-giving technology so that third parties will know how to deal with or avoid the tokens without incurring excessive information costs. It has been suggested that a venture capital type approach towards "milestone-based financing" and concomitant disclosures could be the way forward.[79]

VII. Artificial Intelligence and corporate management

39. Our discussion has thus far focused on aspects of corporate practice law that have *already* been affected, and which could be further enhanced, by new and emerging technology. Given the transformative and disruptive nature of technology advances, however, it is conceivable that more dramatic changes await us farther on the horizon.

40. Indeed, one area that has sparked academic speculation concerns the future impact of Artificial Intelligence ("AI") on corporate management. Petrin presents a radical vision of that future as he envisages that AI would eventually replace human directors on corporate boards.[80] On this view, corporate boards would eventually be replaced by "AI directors" that are essentially a software or algorithm that incorporates all the current functions and inputs of human directors.[81] In a similar vein, Armour and Eidenmüeller predict that whilst today's AI is used mainly to assist with and augment human decisions, future AI will gradually assume more regulatory functions leading to the rise of "self-driving corporations".[82] The impetus for such evolution lies in the productivity gains that would be achieved as machines acquire the ability to make superior decisions at lower

[77] Henry E Smith, "Emergent Property" in James Penner and Henry Smith eds, *Philosophical Foundations of Property Law* (OUP, 2013).
[78] Richard Calnan, *Proprietary Rights and Insolvency* (OUP, 2016) at 1.30.
[79] Dominika Nestarcova, "A Critical Appraisal of Initial Coin Offerings *Lifting the "Digital Token's Veil"*' (2018) 3 International Banking and Securities Law 1 at 33-4; Ivona Skultétyová, *Equity crowdfunding and initial coin offerings: The paradigm shift in startup financing and governance* (Proefschriftmaken, 2020).
[80] Martin Petrin, "Corporate Management in the Age of AI" (2019) *Columbia Business Law Review* 965, 970.
[81] Such a development presupposes the law would, by then, have evolved to permit the appointment of non-human entities as directors, which is not currently the case in most jurisdictions: see Florian Möslein, 'Robots in the Boardroom: Artificial Intelligence and Corporate Law' in Woodrow Barfield and Ugo Pagalio (eds), *Research Handbook on the Law of Artificial Intelligence* (Edward Elgar, 2018)
[82] John Armour & Horst Eidenmüeller, 'Self-Driving Corporations?' (2020) 10 *Harvard Business Law Review* 87.

costs.[83] Importantly, these commentators hypothesise that the emergence of fully automated boards would lead to significant reduction, perhaps even elimination, of agency costs since "[a]utomated decision processes do not lack fidelity".[84] This has the effect of shifting the locus of corporate goverance away from classic agency issues to more strategic issues concerning, for example, the setting of corporate goals[85] and the design and selection of the relevant algorithms.[86] The absence of human directors would also alter the framework for managerial accountability. They tentatively suggest that alternative liability regimes in the form of general shareholder liability or mandatory insurance against algorithmic failures may have to be considered.[87]

41. Not all commentators, however, share this vision of AI's impact. Enriques and Zetsche, for example, do not think it likely that board functions would be fully automated in the foreseeable future.[88] They caution against the "tech nirvana fallacy", which is the error of contrasting "a perfect technology-enhanced but hypothetical world with the real, imperfect one in which humans currently live.'[89] AI is unlikely to be able to perform the full range of board functions because algorithms are data dependent and data is backward-oriented. These features limit their predictive capabilities particularly in novel settings. Further, they do not think technology would reduce or eliminate agency costs – conflicts of interests or informational asymmetry would persist so long as a firm's assets are controlled by human agents. Likewise, Bird and Locke contend that companies would always require "humans in the loop" to provide accountability and oversight.[90]

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[83] John Armour & Horst Eidenmüeller, 'Self-Driving Corporations?' (2020) 10 *Harvard Business Law Review* 87, 107.
[84] John Armour & Horst Eidenmüeller, 'Self-Driving Corporations?' (2020) 10 *Harvard Business Law Review* 87, 90. See also Martin Petrin, "Corporate Management in the Age of AI" (2019) *Columbia Business Law Review* 965, 1005 and 1007.
[85] John Armour & Horst Eidenmüeller, 'Self-Driving Corporations?' (2020) 10 *Harvard Business Law Review* 87, 108 – 109.
[86] Martin Petrin, "Corporate Management in the Age of AI" (2019) *Columbia Business Law Review* 965, 1005 and 1007.
[87] John Armour & Horst Eidenmüeller, 'Self-Driving Corporations?' (2020) 10 *Harvard Business Law Review* 87, 112.
[88] Luca Enriques & Dirk Andreas Zetzsche, 'Corporate Technologies and the Tech Nirvana Fallacy' (March 25, 2020). European Corporate Governance Institute (ECGI) - Law Working Paper No. 457/2019, Hastings Law Journal, Forthcoming, Available at SSRN: https://ssrn.com/abstract=3392321. See also Iris H-Y Chiu and Ernest Lim, "Technology vs Tdeology: How Far will Artificial Intelligence and Distribute Ledger Technology Transform Corporate Governance and Business?", 18 Berkeley Business Law Journal, forthcoming.
[89] Ibid 19.
[90] Helen Bird & Natania Locke, "The Corporate Board In An Age Of Collaborative Intelligence & Complex Risk", forthcoming in Andrew Godwin, Lee Pey Woan, Rosemary Langford (eds), *Technology and Corporate Law: How*

Board functions are too complex to be left entirely to machines, which must themselves be monitored by human actors to ensure continued efficacy. These perspectives suggest that the more pressing concern is to develop existing governance frameworks to guard against the risks of algorithmic failures and design errors as AI is increasingly deployed.[91] So even whilst AI may transform corporate decision making, it does not necessarily alter the underlying legal issues. After all, corporations are themselves artificial constructs supported by a unqiue regulatory framework. The same framework may therefore continue to be of relevance whether decisions are made by human agents or machines.[92]

VIII. Decentralised Autonomous Organisations – An alternative business model?

42. We have seen that blockchain technology has the potential to transform recording and verification functions and has also enabled crowdfunding platforms to raise funds. But will blockchain (or more generally, distributed ledger technology) coupled with smart contracts one day compete with the company as a viable business form? In 2016, the founders of German startup Stock.It conceived the Decentralised Autonomous Organisation ("DAO") as an automated investment fund.[93] As its name suggests, the DAO was intended to be autonomous in that it would execute transactions without human involvement, and decentralised in the sense that it would be governed, not by a hierarchical corporate structure, but by a protocol specified in the code with little or no reliance on the legal system. If it succeeded, the DAO would have been a prototype of a self-sustaining and self-governing entity. Unfortunately, its governance structure proved inadequate. An attacker subsequently exploited a design flaw to siphon substantial funds out of DAO, which could only be remedied by a "hard fork" solution involving the splitting of the

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Innovation Shapes Corporate Activity (Edward Elgar Publishing, 2021), citing Dirk Zetzsche, Douglas Arner, Ross Buckley and Brian Tang, 'Artificial Intelligence in Financial Services: Putting Humans in the Loop', (Legal Studies Research Paper Series 2020/006, Faculty of Law, University of Hong Kong, 2020) 14 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3531711>**.**

[91] On the use of existing corporate regulation framework to analyse the ethical issues presented by AI, see Vivienne Brand, "Artificial Intelligence and Corporate Boards: Some Ethical Implications", in Andrew Godwin, Pey Woan Lee and Rosemary Langford (eds) *Innovation, Technology and Corporate Law*, forthcoming (Edward Elgar Publishing, 2021).

[92] Susan Watson, "Viewing Artificial Persons in the AI Age Through the Lens of History", forthcoming (Edward Elgar Publishing, 2021).

[93] Samuel Falkon, "The Story of the DAO – Its History and Consequences" The Startup, 24 December 2019, https://medium.com/swlh/the-story-of-the-dao-its-history-and-consequences-71e6a8a551ee.

blockchain. Notwithstanding this spectacular failure, remedied only with human intervention,[94] the DAO has raised the intriguing prospect of a new blockchain entity that also exhibits the essential corporate features of "limited liability and asset partitioning, including liquidation protection".[95]

43. Rodrigues posits that, *in theory*, it may be possible to create a "pure" blockchain entity that provides the corporate features of limited liability and asset partitioning through smart contract coding.[96] So long as its activities are confined within the blockchain, such an entity would be able to make its own rules with little need for legal intervention, such that "[t]he code is really the law".[97] In reality, however, such a structure wouldy only be viable if it did not have to interact with the corporeal world at all. If its objective is that of profit-making involving corporeal assets or fiat currency, or that there are identifiable organisers in the corporal world, it is hard to see how it could be free from legal intervention.[98] That does not deny the possibility that blockchain technology may eventually spawn organisations with decentralised governace structures. These structures may emerge as novel organisational forms, or they may alter existing corporate structures,[99] but what seems certain is that legal intervention will be required (as we have seen with ICOs). Company law will have to evolve in tandem with changing governance practices. To that end, technological neutrality and greater flexibility in company law statutes would open up the pathways for change though the law will almost certainly have to be recalibrated in response.

V. Conclusion

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[94] Brunner pointed out that the "hard fork" could only be done with human intervention and against arguments made by the attacker in that case that to do so "would undermine confidence in such undertakings", CM Bruner, "Distributed Ledges, Artificial Intelligence and the Purpose of the Corporation" (2020) 79 Camb LJ 431 at 441.
[95] See Usha Rodriques, "Law and the Blockchain" (2019) 104 Iowa Law Review 679, 707.
[96] Ibid 708 – 714.
[97] Ibid 716.
[98] Ibid 720 – 721.
[99] Mark Fenwick, Joseph A McCahery & Erik PM Vermeulen, "The End of 'Corporate' Governance: Hello 'Platform' Governance" (2019) 20 EBOR 171. Although others have argued that blockchains would not necessarily lead to decentralised governance structures: see Domenico di Prisco, "Blockchain and AI: The Technological Revolution's Impact on Corporate Governance Relationships" (2019) New Challenges in Corporate Governance: Theory and Practice, 368-381, available at https://doi.org/10.22495/ncpr_47..

44. Technology has found its way into company law, and cannot be stopped. Indeed, the first concern of the Report of the CAWG in May 2019 was with digitalisation and the need for corporate law reform. We have argued, however, that where possible, the Act should remain technologically neutral (as CAWG also suggested in order to "futureproof the CA"[100]) so that it can accommodate further changes without troubling the legislature. But this should mean that legislation should be permissive. There may not be the need, for example, for enabling sections to clarify that electronic communications, meetings and voting are possible. Covid-19 has added to this by showing a lack of resilience around the world on the part of governments, corporations and individuals. What is needed is diversity and self-reliance, so the "irreducible core" of company law made up of mandatory rules should be minimised. Unless the matter is one that is central and fundamental to company law and investor protection, the market should be permitted to experiment with different solutions to reduce compliance costs, increase efficiency or simply come up with new business ideas and structures and to fund them. Technology helps in that regard, but it is also a countervailing force as it can enhance protection for investors and third parties as well by improving the enforcement of regulation.

Recommended Text:

Andrew Godwin, Lee Pey Woan, Rosemary Langford (eds), *Technology and Corporate Law: How Innovation Shapes Corporate Activity* forthcoming (Edward Elgar Publishing, 2021)

Report of the Companies Act Working Group, Singapore, issued in May 2019 ("CAWG Report")

[100] CAWG at para 3.