LAND LAW AND THE ENVIRONMENT

Re-examining the Concept of Ownership and Forging New Rights and Obligations in a Changed World

This paper seeks to re-examine the concept of ownership of land in the context of environmental concerns that are in the forefront today. It asserts that traditional absolutist perspectives of land ownership have led to its ecological impoverishment, as land is cleared and put to productive use, irregardless of ecological concerns. New scientific knowledge now compels us to understand the necessity for species and eco-system preservation even as we continue to develop our lands. New obligations must be imposed on landowners, to ensure that environmental considerations are applied before land is transformed for other uses. This paper calls for an ethical perspective on land law, based on respect for the land and its ecological functions. It advocates the imposition of a public trust on the private landowner as well as the State, in appropriate circumstances. These issues are analysed in the Singapore context, where conflicts have inevitably arisen in the struggle between development and conservation in this densely populated city-state, with very limited land space.

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> "The vessel of property law remains to be filled with the needs and desires of each succeeding age."[1]

I. Introduction

1 Land is a species of property that has always been treated differently because it is distinct from other forms of property. In particular, it is immovable, is a limited resource, is virtually indestructible, is an important source of wealth, and no two pieces of

1 Charles Monroe Haar & Lance Liebman, "Preface to First Edition" in *Property and Law* (Little, Brown and Company, Boston, Toronto, 2nd Ed, 1985) at p xxxvi.

land are alike.[2] As land is so inextricably tied up with the wealth of a nation, its economy and its society, the laws that relate to land must constantly evolve in order to reflect the needs of the times.

2 Singapore, as a colony of Great Britain, imported English land law in 1826, when by Letters Patent (more commonly known as the Second Charter of Justice 1826), the Court of Judicature of Prince of Wales Island, Singapore and Malacca was established, with jurisdiction to hear and determine civil and criminal cases similar to that possessed by the English courts.[3] English land law (encompassing common law and equity, as well as statutory law, as it stood on 27 November 1826)[4] was thus imported into Singapore, and would apply unless it has been modified or superseded by local legislation or is contrary to local custom. So English principles of land holding, together with the feudal incidents of tenure, the fee simple, seisin, and the life estate, apply in Singapore, as in other parts of the common law world.[5]

3 What does it mean to "own" land?[6] Traditional (Blackstonian) "absolutist" concepts of real property under the common law emphasised the almost unqualified rights of the landowner.[7] William

2 A landowner who had been wrongfully dispossessed of his land could specifically recover that land by an action for specific performance, as equity recognised that due to the special nature of land, damages could not be an adequate remedy.

3 See Tan Sook Yee, Tang Hang Wu & Kelvin F K Low, *Tan Sook Yee's Principles of Singapore Land Law* (LexisNexis, 3rd Ed, 2009), ch 1. See also Helena H M Chan, *The Legal System of Singapore* (Butterworths Asia, 1995); *The Singapore Legal System* (Kevin Y L Tan ed) (Singapore University Press, 2nd Ed, 1999); *The Singapore Legal System* (Walter Woon ed) (Longmans, 1989); G W Bartholomew, *The Singapore Legal System* (Oxford University Press, 1977).

4 An account of the history and development of English land law is contained in Edward Pollock & Frederick W Maitland, *The History of English Law* vol 2 (Cambridge University Press, 1968). See also K Digby, *An Introduction to the History of the Law of Real Property* (Oxford, Clarendon Press, 1875); W Holdsworth, *An Historical Introduction to the Land Law* (Oxford University Press, 1927); A W B Simpson, *An Introduction to the History of the Land Law* (Oxford University Press, 1961).

5 In Singapore, landholding may be by way of freehold or leasehold tenure, both of which owe their origins to English land law, or it may be an estate in perpetuity, a creature of Ordinance 2 of 1886, now the State Lands Act (Cap 314, 1996 Rev Ed).

6 The property lawyer may emphasise that a person does not really own land, but owns "rights in land", as rights of ownership have been distinguished from rights of use, and rights to land are not absolute but relative. See Lynton K Caldwell, "Rights of Ownership or Rights of Use? – The Need for a New Conceptual Basis for Land Use Policy" (1974) 15(4) Wm & Mary L Rev 759–775, commenting on "The confusing legacy of conventional land 'ownership'" at 760.

7 William Blackstone states "In the beginning of the world, we are informed by holy writ, the all-bountiful Creator gave to man 'dominion over all the earth, and over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth' [Genesis 1:28]. … The earth, therefore and all things therein are the general property of all mankind, exclusive of other beings, from the

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Blackstone ("Blackstone") drew support from the Bible and Judaeo-Christian doctrines which were anthropocentric and proclaimed man's dominance over all other creatures on earth.[8] This absolutism was reinforced in later years, as land came to be viewed as an economic commodity. The emphasis was on making full use of the land, on realising its full economic value.[9] Indigenous species and the natural environment were viewed as obstacles to conventional land use – wolves and bears were predators to domestic livestock; forests were viewed as impediments to modern agriculture, wetlands (now scientifically proven to be extremely rich in biodiversity and performing valuable environmental services) were viewed as swamps that should be drained and developed for productive use.[10] It was only recently, with the advancement of science and the advent of the new field of environmental economics, that eco-systems were recognised to have economic value[11] and Judaeo-Christian theology was re-examined in the light of environmental concerns.[12] As Prof Joseph Sax ("Sax") observed

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immediate gift of the Creator." See William Blackstone, *Blackstone's Commentaries on the Laws of England* Book 2 (London: Dawsons of Pall Mall, 1966) ch 1.

8 The Bible states that in the beginning "God said, 'Let Us make man in Our image, according to Our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, over all the earth, and over every creeping thing that creeps on the earth' [Genesis 1:26] … Then God blessed them, and God said to them, 'Be fruitful and multiply; fill the earth and subdue it; have dominion over the fish of the sea, over the birds of the air, and over every living thing that moves on the earth' [Genesis 1:28]." J Locke pointed out that property was essentially given to humanity by God, that humans were commanded "to subdue the earth", J Locke, *Two Treatises of Government* (M Goldie ed) (London: J M Dent, 1993) at p 130. Roman law emphasised "dominium" over property, so that the civilian codes still define property in terms of absolute rights of enjoyment and disposal. See Code Civil (France), Art 544; *Bürgerliches Gesetzbuch* (Germany), para 903; Swiss Civil Code (Switzerland), Art 641.

9 This was particularly marked in the colonisation of America, where the American settler, "freed of the vestigial constraints of feudalism … developed a tenacious attitude toward unfettered rights of private land ownership. Most important of these was the right to treat land as a commodity – to buy and sell, to speculate, and, under the right of ownership, to take from the land whatever might be of value". See Lynton K Caldwell, "Rights of Ownership or Rights of Use? – The Need for a New Conceptual Basis for Land Use Policy" (1974) 15(4) Wm & Mary L Rev 759–775 at 761.

10 Joseph L Sax, "The Unfinished Agenda of Environmental Law", Commemorative Lecture at the United Nations University, Tokyo, Japan (18 October 2007) in 14 Hastings W-Nw J Envt'l L & Pol'y 1 (2008) at 3.

11 For eco-system evaluation, see <http://www.ecosystemvaluation.org/uses.htm> (accessed 2 December 2009) and Stefano Pagiola, Konrad von Ritter & Joshua Bisho, "Assessing the Economic Value of Ecosystem Conservation", World Bank Environment Department Paper No 101 <http://129.3.20.41/eps/othr/papers/0502/0502006.pdf> (accessed 2 December 2009) and the resources cited therein.

12 See Lynn Townsend White Jr, "The historical roots of our present ecologic crisis" (10 March 1967) 155 Science [3767]. White argued that Judaeo-Christian theology was fundamentally exploitative of the natural world because the Bible asserts man's dominion over nature and established a trend of anthropocentrism; and

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in 1990 "… our experience deals more with the conquest and exploitation of nature than with its protection".[13]

4 Today, it would be difficult to view land law without regard to the environmental impact of man's actions. One of the most recent texts on land law states at the outset that "[m]odern awareness of the phenomenon of land has been considerably shaped by environmental concerns … Modern land law is also being shaped by the impact of the Human Rights Act 1998, European Union Law, and the law of environmental regulation".[14] Environmental issues arise primarily out of our management (or rather, mismanagement) of the economy. New scientific knowledge drawing our attention to the extinction of species, the onset of new diseases like Severe Acute Respiratory Syndrome ("SARS") and avian influenza ("H1N1"), the destruction of eco-systems, and the spectre of climate change, compel us to strive to understand better the necessity for species and eco-system preservation. This, together with changes in societal and governance structures, prompts the adoption of a more "relativist" perception of land ownership, mindful that "entitlements of property are constantly defined and redefined by competing user rights, by social context,

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Christianity makes a distinction between man (formed in God's image) and the rest of creation, which has no "soul" or "reason" and is thus inferior. He advocates either finding a new religion, or rethinking Christianity, adopting St Francis of Assisi as a model, and respect for all creatures as equal to man. It should be noted that Eastern religions are less anthropocentric, and emphasise that man should live in harmony with nature. See Poul Pedersen, "Nature, Religion and Cultural Identity – The Religious Environmentalist Paradigm" in *Asian Perceptions of Nature – A Critical Approach* (Ole Bruun & Arne Kalland eds) (Curzon Press, 1999). Islam views man as a steward for God's work on earth – see International Union for Conservation of Nature, *Environmental Protection in Islam* (Environmental Law and Policy Paper No 20) (2nd Rev Ed, 1994). See also the publications in the *Religions of the World and Ecology Series* (Harvard Divinity School's Centre for the Study of World Religions, 1997–2003). They are as follows: *Indigenous Traditions and Ecology: The Interbeing of Cosmology and Community* (John Grimm ed) (2001); *Hinduism and Ecology: The Intersection of Earth and Sky* (C K Chapple & M E Tucker eds) (2000); *Jainism and Ecology: Nonviolence in the Web of Life* (C K Chapple ed) (2002); *Buddhism and Ecology: The interconnection of Dharma and Deeds* (M E Tucker & D R Williams eds) (1997); *Confucianism and Ecology: The Interrelation of Heaven, Earth and Humans* (M E Tucker & J Berthrong eds) (1998); *Daoism and Ecology: Ways Within a Cosmic Landscape* (N J Girardot, J Miller & Liu Xiaogan eds) (2001); *Judaism and Ecology: Created World and Revealed World* (Hava Tirosh-Samuelson ed) (2002); *Christianity and Ecology: Seeking the Well-Being of Earth and Humans* (D T Hessel & R R Rhuether eds) (2000); *Islam and Ecology: A Bestowed Trust* (R C Fotlz, F M Denny & Azizan Baharuddin eds) (2003).

13 Joseph L Sax, "The Search for Environmental Rights" [1990] Land Use & Envtl L Vol 9:93.

14 Kevin Gray & Susan Francis Gray, *Elements of Land Law* (Oxford, 5th Ed, 2009) at pp 3 and 5.

and by requirements of reasonableness and community directed obligation".[15]

5 This paper seeks to re-examine the concept of ownership of land in the context of environmental concerns that are in the forefront today. It explores the nature of traditional property regimes of private and public (State) ownership at common law, from the perspective of rights and obligations over the land, with a particular focus on the ecological impact of man's activities. It postulates that there is a need for the concept of property and ownership to be re-defined in the context of these environmental concerns. Absolute rights over the land have led to its ecological impoverishment, as land is cleared for economic benefits and put to "productive use". It is essential that new obligations be imposed on landowners, to ensure that environmental considerations are applied before land is transformed for productive use. As stated by Kevin Gray and Susan Francis Gray, the idea of property in land ought to comprise "competing models of … property as a *right* and property as a *responsibility*"[16] [emphasis in original]. This paper therefore examines the foundation on which this "responsibility" is based, and the extent to which it should intrude into common law notions of ownership and erode traditional property rights. It calls for an ethical perspective on land law, based on respect for the land and its ecological functions, and a recognition that man is only a member of the "biotic community".[17] It calls for the application of the public trust doctrine in appropriate circumstances, in the context both of land held by the State and of land held by private owners. The paper discusses not only the ramifications of this trust in terms of the parties' rights and obligations, but also the *locus standi* of non-proprietary interested parties (such as non-governmental organisations ("NGOs") and future generations) to

15 Kevin Gray & Susan Francis Gray, *Elements of Land Law* (Oxford, 5th Ed, 2009) at p 86.

16 Kevin Gray & Susan Francis Gray, "The Idea of Property in Land" in *Land Law: Themes and Perspectives* (Susan Bright & John K Dewar eds) (Oxford University Press, 1998) at p 18. The same writers also said "… the law of property is not really about *things* but rather about *people*, and the study of land law is ultimately an inquiry into an important range of socially defined relationships and morally conditioned obligations." [emphasis in original], see Kevin Gray & Susan Francis Gray, *Elements of Land Law* (Oxford, 5th Ed, 2009) at p 4.

17 In 1948, Aldo Leopold called for a "Land Ethic", lamenting that "There is as yet, no ethic dealing with man's relation to land", asserting that it is "an evolutionary possibility and an ecological necessity". He claimed that "man is, in fact, only a member of a biotic team" and that while "[t]he ordinary citizen today assumes that science knows what makes the community clock tick, the scientist is equally sure that he does not. He knows that the biotic clock is so complex that its working may never be fully understood". Aldo Leopold was mindful that "[a] land ethic of course cannot prevent the alteration, management and use of these 'resources', but it does affirm their right to continued existence, and, at least, in spots, their continued existence in a natural state. See Aldo Leopold, "A Land Ethic" in *A Sand County Almanac* (Oxford University Press, 1949) at pp 201–226.

enforce these obligations. It notes that, in line with the development of environmental ethics and responsibilities, religious perspectives have also evolved towards viewing man not as the dominant master of his environment, but as its "steward".[18]

6 This paper examines these issues, firstly, in the context of traditional common law notions of land ownership rights (on which Singapore's legal system is based) and then in the context of the new thinking that has emerged among environmental lawyers, who seek to integrate the wider concepts of environmental protection into the traditional concepts of land law. These issues are then analysed in the Singapore context, where conflicts have inevitably arisen in the struggle between development and conservation in this largely urban city-state, which has one of the highest population densities in the world[19] and which has no constitutional protection for property.[20]

II. Land law, common law and environmental law

7 English land law has a long history, dating back to the time of the Norman Conquest and feudalism, the time of the Crusades, when land was given by the King to the barons and other leaders of his army as a reward for their bravery and loyalty and in return for the

18 Islam views man as a steward for God. "God's wisdom has ordained to grant human beings stewardship (khalifah) on the earth … therefore man is also the executor of God's injunctions and commands. And as such, he is only a manager of the earth, and not a proprietor, a beneficiary and not a disposer or ordainer. Heaven and earth and all that they contain belong to God alone. Man has been granted stewardship to manage the earth in accordance with the purposes by its Creator: to utilise it for his own benefit and the benefit of other created beings, and for the fulfilment of his interest and theirs. He is thus entrusted with its maintenance and care, and must use it as a trustee, within the limits dictated by his trust. For the Prophet … declared, 'The world is beautiful and verdant, and verily God has made you His stewards in it, and He sees how you acquit yourselves.'", International Union for Conservation of Nature, *Environmental Protection in Islam* (Environmental Law and Policy Paper No 20) (2nd Rev Ed, 1994) at p 773, para 4. See also *Islam and Ecology: A Bestowed Trust* (R C Fotlz, F M Denny & Azizan Baharuddin eds) (2003) in *Religions of the World and Ecology Series* (Harvard Divinity School's Centre for the Study of World Religions, 1997–2003). See also William N R Lucy & Catherine Mitchell, "Replacing Private Property: The Case for Stewardship" (1996) Cambridge Law Journal 556–600.

19 In 2009, Singapore's population was 4.973m. In 2008, it had a population density of 6,814 per square kilometer, over a land area of 710.2km². See <http://www.singstat.gov.sg/stats/keyind.html> (accessed 2 December 2009).

20 Article 13 of the Constitution of Malaysia, which guaranteed this right, was specifically excluded in the new Constitution of Singapore on its separation from Malaysia. See *Singapore Parliamentary Debates, Official Report* (21 December 1966) vol 25 at col 1053 (E W Barker, Minister for Law and National Development).

performances of services.[21] The tenurial system of land holding accounts for the special terminology associated with land law which has befuddled generations of land law students – the fee simple, seisin, fee tail, socage and so on. Like other branches of the common law, English land law developed with the development of its society, and its political and economic dimensions. The leasehold ascended from mere personalty born of contract law, to the hybrid "chattel real" with real property incidents including the landowner's right of specific recovery of his land if dispossessed. With the rise of the Court of Chancery and the application of the principles of equity came the development of "equity's greatest creation", the trust, and the equitable remedies of specific performance and the injunction.[22]

8 In contrast, it may be said that environmental law (particularly pollution laws) emerged as a distinct field of law only in the later part of the 20th century, as industrialisation and the widespread use of chemicals took its toll on the environment.[23] But environmental problems are by no means new. Issues relating to public health such as sanitation, clean water, clean air, and the control of diseases have confronted every civilisation. In England, the common law dealt with these problems through the tort actions of nuisance, negligence, trespass and the rule in *Rylands v Fletcher*.[24] These actions were unsatisfactory, as they were fault-based, "after the event", and favoured the party with greater financial capacity. With the industrial revolution came the urgent problems of pollution, revealing the inadequacies of tort law and necessitating statutory intervention. Thus we see, in England, the passing of early environmental statutes relating to public health such as

21 Edward Pollock & Frederic W Maitland, *The History of English Law before the time of Edward I* vol 2 (London Cambridge University Press, 2nd Ed, 1968); Kevin Gray & Susan Francis Gray, *Elements of Land Law* (Oxford, 5th Ed, 2009) at pp 56–68; E H Burn & J Cartwright, *Cheshire and Burn's Modern Law of Real Property* (Oxford, 17th Ed, 2006).

22 See P H Pettit, *Equity and the Law of Trusts* (Oxford, 11th Ed, 2009); J E Penner, *The Law of Trusts* (Oxford, 6th Ed, 2008). The distinction between common law courts and the court of Chancery and the subsequent "fusion" still generate considerable interest, not just in England but in other common law jurisdictions. See Michael Kirby, "Equity's Australian Isolationism", *The Australian* (20 November 2008) <http://www.theaustralian.news.com.au/business/story/0,28124,24677002-17044,00.html> (accessed 2 December 2009). See also Michael Tilbury, "Fallacy or Furphy?: Fusion in a Judicature World" (2003) 26(2) UNSWLJ 357 <http://www.austlii.edu.au/au/journals/UNSWLJ/2003/31.html> (accessed 2 December 2009).

23 "The field of environmental law is young. Not even four decades have passed since the basic laws for protection of air and water, and for environmental assessment, began to be enacted in the industrialized nations.": Joseph L Sax, "The Unfinished Agenda of Environmental Law", Commemorative Lecture at the United Nations University, Tokyo, Japan (18 October 2007) in 14 Hastings W-Nw J Envt'l L & Pol'y 1 (2008).

24 (1866) LR 1 Ex 265, (1868) LR 3 HL 330. However, laws to protect wildlife and preserve forests have a longer history, and are also part of environmental laws.

the Public Health Act of 1875, the Smoke Abatement Act of 1936, the Public Health Act of 1936, and the Clean Air Acts of 1956 and 1968. In relation to water pollution, the Rivers Prevention of Pollution Act was passed in 1876, followed by the Control of Water Pollution Act 1974. Land use planning laws were introduced in 1909. Thus, in relation to environmental law, a leading academic has remarked "The title may be new but the subject matter is one of considerable antiquity and, now, respectability."[25]

9 Similarly, in Singapore, specific environmental laws for pollution control (air emissions and water pollution) were only passed in the 1970s, after the first meeting of world leaders at Stockholm to discuss environmental concerns.[26] However, statutory laws were enacted even before the Stockholm meeting in order to deal with problems relating to public health. The Environmental Public Health Act[27] and the Destruction of Disease Bearing Insects Act[28] were passed in 1968 at the launch of Singapore's "Keep Singapore Clean" campaign initiated by its first Prime Minister, Mr Lee Kuan Yew ("Lee"). Lee was instrumental in Singapore's transformation from a polluted Crown colony to a "Clean and Green Garden City".[29] Civil actions in tort for nuisance, negligence, trespass, and the rule in *Rylands v Fletcher*[30] continue to apply, an inheritance from the common law.[31]

10 Today, the environment has come to the fore as a matter of grave concern.[32] Industrialisation, economic development and the surge

25 There have been some who have even doubted if the environment can be the subject of specific legal study. See Prof J F Garner "Environmental law – A real subject?" (1992) 142 No 6580 New Law Journal 1718.

26 The United Nations Conference on the Human Environment, Stockholm (1972) see <http://www.unep.org/Documents.Multilingual/Default.asp?documentID=97> (accessed 2 December 2009).

27 Re-enacted in 1987 as Cap 95, 2002 Rev Ed. See <http://statutes.agc.gov.sg/> (accessed 2 December 2009).

28 This Act was repealed in 1998. Today, mosquitoes and other pests are regulated by the Control of Vectors and Pesticides Act (Cap 59, 2002 Rev Ed). See <http://statutes.agc.gov.sg/> (accessed 2 December 2009).

29 See *Singapore – My Clean and Green Home* (Ministry of the Environment, Singapore, 1997).

30 (1866) LR 1 Ex 265, (1868) LR 3 HL 330.

31 For an account of Singapore's environmental law, see Lye Lin Heng, "Singapore's New Environmental Pollution Law: The Environmental Pollution Control Act, 1999" [2000] Sing JLS 1; Lye Lin Heng, "Singapore" in *Environmental Law and Enforcement in the Asia-Pacific Rim* (Terry Mottershead gen ed) (Sweet & Maxwell, 2002) ch 13 at pp 395–434; Lye Lin Heng, "A Fine City – Environmental Law, Governance and Management in Singapore" [2008] Sing JLS 68; Lye Lin Heng, *Singapore's Environmental Laws* (Prof Dr R Blanpain gen ed) (Kluwer Law International, 2008).

32 Modern life has also brought new nuisances such as noise and light pollution. Most jurisdictions have legislation prohibiting excessive noise. In Singapore, noise can be a public nuisance under the Environmental Public Health Act (Cap 95,

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in world population have brought about fundamental changes to our climatic and ecological systems.[33] Climate change is a major cause for concern,[34] as is the destruction of ecological systems and the loss of biological diversity, both terrestrial and marine.[35] Unlike property issues which are almost always at the national/local level, environmental issues have to be tackled at the local, national, sub-regional, regional and global levels. At the national level, there is a need to protect sensitive

2002 Rev Ed) as well as an offence under the Miscellaneous Offences Act (Cap 184, 1997 Rev Ed). The new field of light pollution relates to the excess or obtrusive light created by humans. It has been found to cause adverse health effects, obscures most stars to city dwellers, interferes with astronomical observatories, wastes energy and disrupts ecosystems, and misleads the biological clocks of nocturnal plants and animals. The British Astronomical Association's Campaign for Dark Skies has emphasised these environmental costs and the threat to wildlife and ecosystems, lamenting that "light pollution is seriously undermining the ability of British-based astronomers to take the lead in this cutting-edge field of science" <http://www.britastro.org/dark-skies/> (accessed 2 December 2009). See also <http://dir.yahoo.com/society_and_culture/environment_and_nature/pollution/light/> (accessed 2 December 2009).

33 See *State of the World 2009 – Into a Warming World* <http://www.worldwatch.org/node/5658> (accessed 2 December 2009); *Vital Signs* <http://www.worldwatch.org/vs2009> (accessed 2 December 2009).

34 See Nicholas Stern, *Stern Review on the Economics of Climate Change* (6 October 2006), which discusses the effect of global warming on the world economy. See also the United Nations *Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report, 2007* <http://www.ipcc.ch/publications_and_data/publications_and_data_reports.htm#1> (accessed 2 December 2009)>. The Fifth Report is due to be released in 2014. The first part of the ninth session of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) and the first part of the seventh session of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) took place recently (28 September to 9 October 2009) in Bangkok, Thailand. World leaders will meet in Copenhagen, Denmark in December 2009 to deliberate on the future of the Kyoto Protocol.

35 It has been estimated that since 1960 extinction rates for species have soared and by 1974 could have reached 100 species per year. Norman Myers, *The Sinking Ark: A New Look at the Problem of Disappearing Species* (Oxford: Pergamon Press, 1979) at p 4. Myers extrapolated that by the year 2000 the extinction rate for all species would be in the range of 14–20%. This was criticised as without any scientific basis – see Julian L Simon, *Population Matters: People, Resources, Environment and Immigration* (Transaction Publishers, New Brunswick, New Jersey, 1996). See also Bjørn Lomborg, *The Sceptical Environmentalist: Measuring the Real State of the World* (Cambridge University Press, 2001). But the International Union for Conservation of Nature's recently released Red Data List has highlighted that 21% of all known mammals, 30% of amphibians, 70% of plants and 35% of invertebrates are threatened with extinction <http://www.iucnredlist.org/about/red-list-overview> (accessed 2 December 2009); "Over one-third of world species face extinction: but it's not too late", UK Public Service Review: International Policy Issues No 9 (3 November 2009) <http://www.publicservice.co.uk/feature_story.asp?id=11484> (accessed 2 December 2009). See also "Our eco-systems are a critical source of life", UK Public Service Review: Science & Technology Issue 2 (9 March 2009) <http://www.publicservice.co.uk/feature_story.asp?id=11408> (accessed 2 December 2009).

ecological systems (ecosystems), as well as to restore damaged habitats. As American ecologist Aldo Leopold wisely observed in 1948:

> Land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals. Food chains are the living channels which conduct energy upward; death and decay return it to the soil. The circuit is not closed; some energy is dissipated in decay, some is added by absorption from the air, some is stored in soils, peats and long-lived forests; but it is a sustained circuit, like a slowly augmented revolving fund of life … Evolutionary changes are usually slow and local. Man's invention of tools has enabled him to make changes of unprecedented violence, rapidity and scope …[36]

11 But land law was not designed to assure the maintenance of ecosystems and species preservation. On the contrary, land law developed as landowners sought to maximise the economic productivity of the land. It must, however, be made clear at the outset that, for the purposes of effective management of natural resources, a system of land ownership is preferable to that of free access. As Aristotle observed in the 4th century BC, whatever "is common to the greatest number has the least care bestowed on it".[37] Indeed, Garett J Hardin's ("Hardin") *Tragedy of the Commons* is really a story of the tragedy of open access.[38] Land that is open to use by any person cannot be conserved, and opens itself to exploitation by all. There is thus a need first to place land in some form of ownership which denies open access and then to impose obligations on the landowner in order to ensure wise use of his lands.

12 This paper examines the notion of ownership in land law and argues that changed circumstances in the environment today warrant a re-examination of the meaning of ownership. The paper will explore this proposition from two perspectives – first, that of the individual landowner; and second, that of the State. This examination will necessitate an analysis of the meaning of land and of the meaning of "ownership". The paper advocates that land ownership should be recognised as a species of "stewardship"[39] and draws us into the debate

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36 Aldo Leopold, *A Sand County Almanac* (Oxford University Press, 1949) at p 216.

37 See "Politica" in *The Basic Works of Aristotle* (B Jowett trans, Richard McKeon ed) (New York: Random House, 1941) cited in Daniel H Cole, *Pollution and Property: Comparing Ownership Institutions for Environmental Protection* (Cambridge University Press, 2002) at p 2.

38 Garrett Hardin, "The Tragedy of the Commons" (1968) Science 162:1243-8. See criticisms by Daniel H Cole, *Pollution and Property: Comparing Ownership Institutions for Environmental Protection* (Cambridge University Press, 2002) at p 15, "It would have been better if he (Hardin) had entitled his article 'The Tragedy of Open Access.'"

39 See William N R Lucy and Catherine Mitchell, "Replacing Private Property: The Case for Stewardship" (1996) Cambridge Law Journal 556–600. The writers argue for stewardship without proposing a public trust, but state that the trust is an analogous concept to their proposal: "The hallmark of stewardship is land holding

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on the issue of the "public trust", a doctrine first put forward by Sax in his seminal article in the Michigan Law Review in 1970[40] and then taken up by many academics in the United States,[41] Australia and New Zealand,[42] and England.[43] In England, this has been described as a "new regime of environmental property", and as "equitable property in the natural environment", where the notion of "property" is no longer a mode of empowering exclusion but is now a means of empowering access (to parks, scenic sites, ecologically sensitive areas *etc*).[44] At the same time, in the context of the private landowner, this may raise issues relating to a "taking" of his property if the owner is barred from developing his land and thereby alleges he has suffered a loss of economic value. Questions will arise as to whether compensation is payable. This paper will not discuss the issue of "takings" and compensation, as it does not quite arise in the context of Singapore,

subject to responsibilities of careful use, rather than the extensive rights to exclude, control and alienate that are characteristic of private property", at 584.

40 Joseph L Sax, "The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention" (1970) 68 Michigan Law Review 471. His latest writing is "Environmental Law Forty Years Later: Looking Back and Looking Ahead" in *Biodiversity Conservation, Law + Livelihoods – Bridging the North-South Divide* (Michael I Jeffery QC, Jeremy Firestone & Karen Bubna-Litic eds) (Cambridge University Press, 2006) at pp 1–25.

41 See, for example, Carol M Rose, "Takings, Public Trust, Unhappy Truths, and Helpless Giants: A Review of Professor Joseph Sax's Defense of the Environment Through Academic Scholarship: Joseph Sax and the Idea of the Public Trust" (1998) 25 Ecology LQ 351; Carol M Rose, "Property Rights, Regulatory Regimes and the New Takings Jurisprudence – An Evolutionary Approach" (1990) 57 Tenn L Rev 577; Carol M Rose, "Property and Expropriation: Themes and Variations in American Law" 2000 Utah L Rev 1; Carol M Rose, "Rethinking Environmental Controls: Management Strategies for Common Resources" (1991) 41 Duke LJ 1; Richard J Lazarus, "Changing Conceptions of Property and Sovereignty in Natural Resources: Questioning the Public Trust Doctrine" (1986) 71 Iowa L Rev 631; Alyson C Flournoy, "In Search of an Environmental Ethic" (2003) 28 Colum J Envtl L 63; Marc R Poirier, "Property, Environment, Community" (1997) 12 J Envtl L & Litig 43; Terry W Farzier, "Protecting Ecological Integrity Within the Balancing Function of Property Law" (1998) 28 Envtl L 53; Eric T Freyfogle, "Land Ownership and the Level of Regulation: The Particulars of Owning" (1999) 25 Ecology LQ 574; Kevin Gray, "There's No Place like Home!" (2007) 11(1) Journal of South Pacific Law 73–88.

42 See Tim Bonyhady, "A Usable Past: the Public Trust in Australia" (1995) 12 EPLJ 329; Paul Stein, "Ethical Issues in Land Use Planning and the Public Trust" (1996) 13 EPLJ 493; Gary Myers, "Divining common law standards for Environmental Protection: Application of the Public Trust doctrine …" (1994) 11 EPLJ 289; G M Bates, *Environmental Law in Australia* (Butterworths, 5th Ed, 2002) at pp 23–24.

43 See Kevin Gray, "Equitable Property" (1994) 47(2) Current Legal Problems 157 at 188; Catherine Redgwell, *Intergenerational Trusts and Environmental Protection* (Juris Publishing, Manchester University Press, 1999).

44 Kevin Gray, "Equitable Property" (1994) 47(2) Current Legal Problems 157.

which has no constitutional protection of the right to property,[45] but this is a major issue in other jurisdictions.

13 We shall first look at land and what "ownership" means in the traditional context, and what it should mean in today's world, particularly in Singapore.

III. Land ownership and property rights

A. Property rights in natural resources – Public/private ownership

14 Natural resources such as lands, forests, minerals, waters, and wildlife are usually held by the State, which may allow or curtail public access or appropriation. This is true of both socialist and capitalist countries. The State may reserve rights over minerals, prohibit hunting or fishing, and designate areas for preservation and conservation. In Singapore, legislation reserves to the State the right to search for and take any mineral oil found on all state grants and leases, as well as a royalty of 10% of the gross produce of all mines and minerals other than laterite found in or upon the land.[46] As for the ownership of wildlife resources, these may be mostly publicly owned (as in the United States) or mostly in private ownership (as in the United Kingdom).[47] It is acknowledged that wildlife populations threatened by overhunting can be more effectively conserved by the imposition of state ownership and control. Thus, in Poland, the

45 Article 13 of the Constitution of Malaysia, which guaranteed this right, was specifically excluded in the new Constitution of Singapore on its separation from Malaysia. See *Singapore Parliamentary Debates, Official Report* (21 December 1966) vol 25 at col 1053 (E W Barker, Minister for Law and National Development).

46 Sections 4(2) and 7(1)(*a*), State Lands Act (Cap 314, 1996 Rev Ed). There is also an implied condition in every land grant that "the grantee or lessee, his executors, administrators and assigns, will not at any time, without the written consent of the President and subject to such conditions as to the President may seem fit, open, work or dig for any oil, mines, minerals, quarries, laterite, clay, gravel or sand (except materials for the making of or repairing new or existing roads on the land) but will to the utmost of his power keep the oil, mines, minerals, quarries, laterite, clay, gravel or sand pits or deposits unopened and unworked", see s 7(2). Failure to observe these conditions renders the landowner liable to re-entry and forfeiture by the State.

47 See the explanation by Daniel H Cole, *Pollution and Property: Comparing Ownership Institutions for Environmental Protection* (Cambridge University Press, 2002) at pp 25–29, that based on history, most lands in the United Kingdom were held by very few individuals, each of whom owned vast tracts of land. "In the middle of the nineteenth century, nearly one-tenth of all land in England, Scotland and Wales – roughly 7.5 million acres – was owned by thirty-five individuals, each of whom possessed estates of 100,000 or more acres. Just 400 families owned 20–25 percent of the land …" at p 27.

extension of Crown ownership over bison populations in the 16th century partly explains why Poland is the only country in Europe that still has free-roaming herds of bison.[48] In contrast, the new settlers in North America were allowed freely to kill or take wildlife with rare exceptions. Hunting became a sport, a form of recreation, and ceased to be for subsistence. Thus, the bison was almost extinguished in the North American prairies, its numbers plunging from millions in the 18th and 19th centuries to just over 140,000 today.[49]

15 The perils of unfettered access have been mentioned in connection with Hardin's *Tragedy of the Commons*. However, the private ownership of land will not, in itself, secure the protection of the environment. This is because the protection of the environment is seldom a consideration of the landowner. Instead, the focus is on how best to put the land to optimal financial use. Thus, landowners in Great Britain over-harvested timber in the 19th century, resulting in their country having the smallest percentage of forested land of any country in Europe.[50] In the same period, Northern Wisconsin was similarly denuded by private landowners who continued to harvest beyond sustainable levels.[51] The American Dustbowl in the 1930s was caused by poor agricultural practices and years of sustained drought.[52] As for species preservation, this often conflicts with the landowner's use of the land – the preservation of grizzly bears, for example (or, closer home, the *orang utan*) would require landowners to restrict profitable logging and mining, a choice that few would want to make. The law must therefore intervene to protect endangered species as well as critical habitats, even if this necessitates inroads into traditional ownership rights.

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48 Daniel H Cole, *Instituting Environmental Protection: From Red to Green in Poland* (Basingstoke: Macmillan, 1998) at p 25.

49 See <http://www.huntingsociety.org/BisonInfo.html> (accessed 2 December 2009).

50 Daniel H Cole, *Pollution and Property: Comparing Ownership Institutions for Environmental Protection* (Cambridge University Press, 2002) at p 97, citing David Evans, *A History of Nature Conservation in Britain* (New York, Routledge, 1992). To remedy the problem, Parliament in 1919 created the Forestry Commission with power to purchase and reforest land. Within 20 years, the total acreage of forest lands in Great Britain had increased by nearly 25% (David Evans, *A History of Nature Conservation in Britain* (New York, Routledge, 1992) at p 57).

51 James Willard Hurst, *Law and Economic Growth: the Legal History of the Lumber Industry in Wisconsin 1836 – 1915* (Madison: University of Wisconsin Press, 1984) at pp 105, 127 and 435. See also Thomas Michael Power, *Lost Landscapes and Failed Economies: the Search for a Value of the Place* (Washington DC: Island Press, 1996) at p 138.

52 Eric T Freyfogle, "The Tragedy of Fragmentation" (2002) 36 Valparaiso Univ L Rev 306; see also Tim Lehman, *Public Values, Private Lands Farmland Preservation Policy* (University of North Carolina Press, 1995).

B. Property rights to wildlife and the doctrine of first possession

16 The common law divided animals into two classes: domestic and wild. Domestic animals (*domitae naturae*) can be owned absolutely, akin to other forms of personal property. Indeed, the word "chattel" (denoting personal property) is derived from the Latin word for "cattle" (*catalla*). However, there is no absolute property in wild or feral animals (*ferae naturae*). They cannot be the subject of ownership while they are alive as, by their nature, they may move to another piece of land. However, qualified property in wild animals may be obtained in three ways: *per industriam hominis* (taming them by art, industry and education); *ratione impotentiae* (confining them within one's immediate power); and *propter privilegium* (the privilege to hunt, take and kill animals to the exclusion of others).

17 The person in possession of the land which wild animals inhabit has a "qualified property" which arises *ratione soli* – he has a common law right to hunt and catch wild creatures, thereby reducing them to his possession.[53] The common law awarded specific property to the person who first asserted possession.[54] The act of possession was, in the words of Blackstone, a "declaration of one's intention to appropriate …".[55] This appropriation ties in with the economists' rationale that appropriation required work and work should be rewarded.[56] Thus, in fox hunting, ownership of the fox goes to the person who kills it, not to the person who started the chase.[57] Most States have passed laws to protect endangered species of wild fauna and flora, and the extent of protection varies depending on how broadly or narrowly the law is drafted.

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53 Kevin Gray & Susan Francis Gray, *Elements of Land Law* (Oxford, 5th Ed, 2009) at p 49. William Blackstone, *Blackstone's Commentaries on the Laws of England* Book 2 (London: Dawsons of Pall Mall, 1966) at p 391; *Case of Swans* (1592) 7 Co Rep 15b at 17b, 77 ER 435 at 438; *Blades v Higgs* (1865) 11 HL Cas 621 at 638, 11 ER 1474 at 1481, *per* Lord Chelmsford; *Yanner v Eaton* (1999) 201 CLR 351.

54 Carol M Rose, "Possession as the Origin of Property" (1985) 52 U Chi L Rev 73–88, reproduced in Robert C Ellickson, Carol M Rose, Bruce A Ackerman, *Perspectives on Property Law* (Little, Brown and Company, 2nd Ed, 1995) at pp 181–189.

55 William Blackstone, *Blackstone's Commentaries on the Laws of England* Book 2 (London: Dawsons of Pall Mall, 1966) at p 258, quoted by Carol M Rose, "Possession as the Origin of Property" (1985) 52 U Chi L Rev 73–88, reproduced in Robert C Ellickson, Carol M Rose, Bruce A Ackerman, *Perspectives on Property Law* (Little, Brown and Company, 2nd Ed, 1995) at p 184.

56 It was John Locke who first suggested that "The Labour of his Body, and the Work of his Hands, we may say, are properly his", John Locke, *Two Treatises on Government* (P Laslett ed) (Cambridge, 1988) at p 287. See also W Lucy and F Barker, "Justifying Property and Justifying Access" (1993) 6 Canadian Journal of Law and Jurisprudence 287 at 296–304; K Olivecrona, "Locke's Theory of Appropriation" (1974) 24 Philosophical Quarterly 220.

57 *Pierson v Post* 3 Cai R 175, 2 Am Dec 264 (NY 1805) Supreme Court, New York.

18 This notion of appropriation as the foundation of property rights applied as well to the assertion of title to land. The common law thus did not recognise that native peoples in America had title to the land, as native American Indians had never done acts on the land to establish property in it.[58] In *Johnson v M'Intosh*[59] Marshall CJ confirmed the "exclusive right of the discoverers" (European nations) to appropriate the lands occupied by the Indians, stating that "… the Indian occupants are to be considered merely as occupants, to be protected indeed, while in peace, in the possession of their lands, but to be deemed incapable of transferring the absolute title to others". He observed that "[T]he tribes of Indians inhabiting this country were fierce savages, whose occupation was war, and whose subsistence was drawn chiefly from the forest. To leave them in possession of their country, was to leave the country a wilderness …".

19 Similarly, in Australia, it was not until 1992 in the landmark case of *Mabo v Queensland (No 2)*[60] that aboriginals and Torres Strait Islanders were held to have rights to their land which originated before the arrival of British colonisation. These rights depended on the local laws and customs and thus the concept of *terra nullius* did not apply. The High Court of Australia recognised that the indigenous population had a pre-existing system of law which, along with all rights subsisting thereunder, including native rights to land, would remain in force under the new sovereign except where specifically modified or extinguished by legislative or executive action. The Native Title Act was then passed.[61]

C. The ownership (and protection) of wild fauna in Singapore

20 We have seen that the common law as it stood on 27 November 1826 was imported into Singapore, as a Crown colony, subject to local modification by statute or custom. Applying the common law, therefore,

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58 "At least some Indians professed bewilderment at the concept of owning the land. Indeed, they prided themselves on not marking the land but rather on moving lightly through it, living with the land and with its creatures as members of the same family rather than as strangers who visited only to conquer the objects of nature. The doctrine of first possession, quite to the contrary, reflects the attitude that human beings are outsiders to nature. It gives the earth and its creatures over to those who mark them so clearly as to transform them, so that no one else will mistake them for unsubdued nature." Carol M Rose, "Possession as the Origin of Property" (1985) 52 U Chi L Rev 73–88, reproduced in Robert C Ellickson, Carol M Rose, Bruce A Ackerman, *Perspectives on Property Law* (Little, Brown and Company, 2nd Ed, 1995) at pp 188–189. See also Charles M Haar and Lance Liebman, "Chain of Title: European versus Native American" in *Property and Law* (Little, Brown and Company, Boston and Toronto, 2nd Ed, 1985).

59 21 US (8 Wheat) 543 (1823).

60 (1992) 175 CLR 1, [1992] HCA 23.

61 See *The Wik Peoples v State of Queensland; The Thayorre People v State of Queensland* (1996) 187 CLR 1.

wildlife *prima facie* belongs to the State and, in the absence of legislation prohibiting its taking, would belong to the person who is first able to appropriate it.

21 In Singapore, the first wildlife protection law, the Wild Birds Protection Ordinance, was passed as early as 1884, to protect a large number of wild birds.[62] It was soon amended to include wild animals, and today the Wild Animals and Birds Act ("WABA") protects all wild animals and birds, with the exception of six birds.[63] It is an offence to "kill, take or keep" any wild animal or bird without a licence.[64] The penalty is a fine of up to $1,000 plus forfeiture of the animal or bird.[65] Section 2 defines "wild animals and birds" as inclusive of "all species of animals and birds of a wild nature", but not of "domestic dogs and cats, horses, cattle, sheep, goats, domestic pigs, poultry and ducks". It is unclear whether the phrase covers fish, reptiles and invertebrates. At common law, the phrase "wild animal" has been said to be "sufficiently narrow to exclude fish and sufficiently broad to encompass birds, insects and reptiles".[66] The Act is administered by the Agri-Veterinary Authority ("AVA"),[67] which also administers the Endangered Species (Import and Export) Act,[68] and the Animals and Birds Act.[69]

22 Apart from the general protection for wildlife under WABA, Singapore has enhanced protection for wildlife found in nature reserves and national parks, as well as parks under the jurisdiction of statutory boards. Singapore has four nature reserves (Bukit Timah Nature Reserve, Central Catchment Nature Reserve, Labrador Nature Reserve

62 Ordinance III of 1884. See Lye Lin Heng, "Wildlife Protection Laws in Singapore" [1991] 1 Sing JLS 292. See also Joseph Chun, "Wildlife Law in Singapore: Protecting Wildlife in the 'Garden City'" in *Wildlife Law – A Global Perspective* (Raj Panwani ed) (American Bar Association, 2008) ch 5 at pp 201–256.

63 Wild Animals and Birds Act (Cap 351, 2000 Rev Ed). These six birds are listed in the Schedule: the house crow, feral pigeon, purple-backed starling, Philippine glossy starling, common myna and the white-vented myna.

64 A licence can be obtained under the Wild Animals (Licensing) Order (S 55/75), but the Agri-Veterinary Authority maintains that licences to keep wild animals are no longer issued to private individuals.

65 Section 5(1) Wild Animals and Birds Act (Cap 351, 2000 Rev Ed).

66 Kevin Gray & Susan Francis Gray, *Elements of Land Law* (Oxford, 5th Ed, 2009) at p 49.

67 See <http://www.ava.gov.sg> (accessed 2 December 2009).

68 Act 5 of 2006, now Cap 92A, 2008 Rev Ed, passed to give effect to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (entered into force on 1 July 1975).

69 Ordinance 3 of 1965, now Cap 7, 2002 Rev Ed. The preamble reads "An Act for preventing the introduction into, and the spreading within, Singapore of diseases of animals, birds or fish; for the control of the movement of animals, birds or fish into, within and from Singapore; for the prevention of cruelty to animals, birds or fish; for measures pertaining to the general welfare and improvement of animals, birds or fish in Singapore and for purposes incidental thereto."

and the Sungei Buloh Wetland Reserve) and two national parks (the Singapore Botanic Gardens and Fort Canning Park). These are protected under the new Parks and Trees Act, 2005,[70] passed on 1 August 2005 in order "to provide for the planting, maintenance and conservation of trees and plants within national parks, nature reserves, tree conservation areas, heritage road green buffers and other specified areas, and for matters connected therewith". The term "animal" is given a very wide definition in s 2, to mean "any mammal (other than man), bird, reptile, amphibian, fish (including shellfish), insect or any other living creature, vertebrate or invertebrate, and includes any egg or young thereof". Section 9 makes it an offence to:

(a) capture, displace or feed any animal;

(b) disturb or take the nest of any animal;

(c) collect, remove or wilfully displace any other organism;

(d) use any animal, firearm, explosive, net, trap, hunting device or instrument or means whatever for the purpose of capturing any animal; or

(e) carry or have in the person's possession any explosive, net, trap or hunting device.

23 Subsection 2 makes it an offence for any person to carry out any activity within any national park or nature reserve which he knows or ought reasonably to know causes or may cause injury to, or the death of, any animal or any other organism within the national park or nature reserve. It is an offence to release any animal into a nature reserve or to allow a domestic animal to stray into a nature reserve. It is also an offence to wilfully or negligently destroy, damage or deface "any object of zoological, botanical, geological, ethnological, scientific or aesthetic interest" (s 25). In addition, the Parks and Trees Regulations protect all animals in any public park managed by the National Parks Board.[71]

24 Wildlife is also legally protected in parks managed by the Public Utilities Board,[72] Jurong Town Corporation, and the Sentosa

70 Act 4 of 2005, with effect from 1 August 2005, now Cap 216, 2006 Rev Ed.

71 A "public park" is defined in s 2 of the Parks and Trees Act (Cap 216, 2006 Rev Ed) to mean "any State land, any land belonging to the National Parks Board or any other land, which is — (*a*) utilised as a public park, recreation ground, playground, garden, public open space, walk, park connector or green verge; and (*b*) managed or maintained by the Board".

72 The Public Utilities Board manages parks in its catchment areas, under the Public Utilities (Reservoirs and Catchment Area) Regulations 2006 passed in 2006 (S 401/2006, with effect from 28 June 2006), formerly Public Utilities (Catchment Area Parks) Regulations (S 48/1989). There may be some overlap in terms of jurisdiction, as parts of the catchment area parks also fall within the protection of the Parks and Trees Act (Cap 216, 2006 Rev Ed), as part of the Central Catchment

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Development Corporation.[73] Protection is extended to include birds, butterflies, fish, insects and invertebrates, as well as their eggs and nests.

25 It is clear that statute law has modified the position at common law and will apply to protect all wild animals and birds found throughout the State, including those found on private land. Landowners in Singapore can no longer exercise their common law rights to capture any wild animal or bird found on their land, with the exception of the six birds that are not protected under WABA. It follows that this protection also extends to wildlife found on state land. However, the laws do not protect wildlife from loss of habitat due to development. This is a very real issue in urban Singapore. A detailed account of the many instances where ecologically sensitive areas in Singapore were developed without environmental impact assessments, public consultation or regard to alternatives appear in two recent articles which argued for the incorporation of ethical land stewardship in Singapore.[74] One example is the construction of the Pan-Island Expressway in 1985, which cut across Singapore's sole remaining primary rainforest, separating the Bukit Timah Nature Reserve from the Central Catchment Nature Reserve. Soon after its construction, it was not unusual to find carcasses of wild animals on the expressway, mown down by fast-moving vehicles as they tried to cross to the other side. It appeared that the alternative of building a tunnel was not considered, nor was the Nature Society or any other environmental group consulted. How have other States dealt with these issues?

26 A similar problem confronted the Land and Environment Court in New South Wales, Australia. In *Leatch v National Parks and Wildlife*

Nature Reserves. However, the penalties under the two laws are very different, with a maximum fine of $50,000 under the Parks and Trees Act (Cap 216, 2006 Rev Ed), imprisonment for up to six months, and a daily fine of $500 for a continuing offence; as compared to a maximum penalty of $3,000 under the Public Utilities (Reservoirs and Catchment Area) Regulations 2006 (S 401/2006).

73 See the Jurong Town Corporation (Parks) Regulations (S 285/1988) and the Sentosa Development Corporation Regulations (S 454/1997). The latter applies to Sentosa Island as well as 11 other islands. For an overview of Singapore's nature protection laws, see Lye Lin Heng, "Nature Conservation Laws – The Legal Protection of Flora and Fauna in Singapore" in *The Singapore Red Data Book – Threatened Plants and Animals of Singapore* (Geoffrey Davison, Ho Hua Chew & Peter Ng Kee Ling eds) (Nature Society, Singapore, 2nd Ed, 2008) ch 2 at pp 5–13. See also Joseph Chun, "Wildlife Law in Singapore: Protecting Wildlife in the 'Garden City'" in *Wildlife Law – A Global Perspective* (Raj Panwani ed) (American Bar Association, 2008); also Joseph Chun, "Enhancing the Garden City: Towards a Deeper Shade of Green" (2006) 18 SAcLJ 248.

74 Joseph Chun, "Beyond Real Estate: Sowing the Legal Seeds for an Ethical Public Land Stewardship in Singapore" 3 Macquarie J Int & Comp Envtl L 1–34. See also Ho Hua Chew, "A Value Orientation for Nature Preservation in Singapore" (1997) 44 Environmental Monitoring and Assessment 91.

Service and Shoalhaven City Council,[75] a city council proposed to construct a road-link to relieve congestion, but this would cut across a national park. It was anticipated that some wildlife might be killed in the process. The law required that the council apply for a licence from the Director-General of the National Parks and Wildlife Service to take or kill the endangered fauna. In addition, an environmental impact statement had first to be undertaken, and in considering a licence application the Director-General had to take into account the flora and fauna impact statement, any submissions received, as well as any reasons given by the scientific committee. It was found that the proposed road would have an adverse impact on a number of rare plant species as well as the Yellow Bellied Glider and the Giant Burrowing Frog. The indirect impact of the development included habitat fragmentation and disturbance to individual animals from noise and light.

27 The court held that:

> The 'precautionary principle' which has been referred to in almost every recent international environmental agreement, including the 1992 Rio Declaration on Environment and Development [Principle 15], the 1992 UN Framework Convention on Climate Change [Art 3(3)], the June 1990 London Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer [preamble, para 6] and the 1992 Convention on Biological Diversity … should be applied.[76] This states that '… where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimise such a threat.'[77]

28 Noting that it was also embodied in state legislation, such as the Protection of the Environment Administration Act 1991 (NSW), Justice Paul Stein said "While there is no express provision requiring consideration of the 'precautionary principle', consideration of the state of knowledge or uncertainty regarding a species, the potential for serious or irreversible harm to an endangered fauna and the adoption of

75 (1993) 81 LGERA 270.

76 It should be noted that Singapore is also party to these international instruments. The Singapore government was present at the UN Conference on Environment and Development at Rio de Janeiro (3–14 June 1992), when the Rio Declaration was made. Singapore ratified the UN Framework Convention on Climate Change on 29 May 1997, and acceded to the Vienna Convention on Substances that Deplete the Ozone Layer and its Montreal Protocol (5 January 1989) (as amended by subsequent Conferences of the Parties in London, Copenhagen, Montreal and Beijing) – see <http://ozone.unep.org/Ratification_status/> (accessed 2 December 2009). Singapore ratified the Convention on Biological Diversity (entered into force on 29 December 1993) on 2 December 1995.

77 See D Freestone, "The Precautionary Principle" in *International Law and Global Climate Change* (Robin Churchill & David Freestone eds) (Graham & Trotman/Martinus Nijhoff, 1991) at pp 21–40.

a cautious approach in protection of endangered fauna is clearly consistent with the subject matter, scope and purpose of the Act."[78] Accordingly, he found that applying the precautionary principle, the licence should not be granted. He was careful to emphasise that the matter could be re-opened if there were advances in scientific knowledge, and that changes in the proposal and ameliorative measures might also lead to a different assessment.

29 The precautionary principle has also been applied by the Indian Supreme Court, which held that the principle was an essential feature of "sustainable development".[79] However, it is as yet unclear whether the principle has become part of customary international law. In the words of a leading authority on international environmental law:

> The legal status of the precautionary principle is evolving. There is certainly sufficient evidence of state practice to support the conclusion that the principle, as elaborated in Principle 15 of the Rio Declaration and various international conventions, has now received sufficiently broad support to allow a strong argument to be made that it reflects a principle of customary law, and that within the context of the European Union it has now achieved customary status, without prejudice to the precise consequences of its application in any given case. Nevertheless it must be recognised that international courts and tribunals have been reluctant to accept explicitly that the principle has a customary international law status, notwithstanding the preponderance of support for that view, and diminishing opposition to it.[80]

D. The ownership (and protection) of flora in Singapore

30 The Singapore Land Titles Act defines "land" to include "… any estate or interest therein and all vegetation growing thereon and structures affixed thereto …".[81] It is therefore clear that "land" includes

78 (1993) 81 LGERA 270 at 282–283.

79 *Vellore Citizens' Welfare Forum v Union of India* Writ Petition No 914 of 1991 [1996] INSC 1027, see <http://www.ielrc.org/content/e9607.pdf> (accessed 2 December 2009). The court said at [13]: "The precautionary principle and the ["]polluter pays["] principle have been accepted as part of the law of the land …" and at [15]: "Even otherwise once these principles are accepted as part of the Customary International Law there would be no difficulty in accepting them as part of the domestic law. It is [an] almost accepted proposition of law that the rule[s] of Customary International Law which are not contrary to the municipal law shall be deemed to have been incorporated in the domestic law and shall be followed by the Courts of Law."

80 Philippe Sands, *Principles of International Environmental Law* (Cambridge University Press, 2nd Ed, 2003) at p 279.

81 Cap 157, 2004 Rev Ed. There are other statutory definitions of land, such as in the Law of Property Act 1925 (c 20) (UK), which mentions that it includes corporeal and incorporeal elements, and as expressed in the Latin maxim *cuius est solum eius*

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all vegetation that grows on that piece of land. What rights do landowners have over this vegetation? Is there any protection for rare plants or trees that are growing on land that is private owned, or is owned by the State?

31 Again, there is specific protection for all plants in Singapore's nature reserves and national parks, as well as in the parks administered by the Jurong Town Corporation, Sentosa Corporation, and the Public Utilities Board. It is an offence to damage, cut or collect any plant or tree. In addition, there are two areas in Singapore where trees are specially protected. These are the two tree conservation areas (outside national parks or nature reserves) in Singapore, established by Part IV of the Parks and Trees Act, and protected by the Parks and Trees (Preservation of Trees) Order 1991.[82] Trees with a girth of more than one metre, measured a half-metre from the ground, growing on tree conservation areas or growing on vacant land (whether within or outside a tree conservation area) cannot be cut down without the permission of the Commissioner of Parks and Trees.[83] The penalty on conviction is a fine of $50,000.[84] There is also special protection for roadside trees and plants if they are designated as "heritage road green buffers" under s 16 of the Act.

32 In September 2002, a Changi tree (*hopea sangal*) thought to be extinct in Singapore was found in the area of Changi, after which it was

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est usque ad coelum et ad inferos: he who owns the land owns everything reaching up to the very heavens and down to the depths of the earth. See Kevin Gray & Susan Francis Gray, *Elements of Land Law* (Oxford, 5th Ed, 2009) at p 14.

82 The two tree conservation areas are (a) the area bounded by Dunearn Road, Whitley Road, Mt. Pleasant Road, Thomson Road, Lornie Road, Pan Island Expressway, Clementi Road, Pasir Panjang Road, Telok Blangah Road, Lower Delta Road, Ayer Rajah Expressway, Alexandra Road, River Valley Road, Fort Canning Road and Selegie Road; and (b) the area bounded by Netheravon Road, Cranwell Road, Loyang Avenue, Loyang Way, Upper Changi Road North and Changi Village Road. See Lye Lin Heng, "Nature Conservation Laws – The Legal Protection of Flora and Fauna in Singapore" in *The Singapore Red Data Book – Threatened Plants and Animals in Singapore* (Geoffrey Davison, Ho Hua Chew & Peter Ng Kee Ling eds) (Nature Society Singapore, 2nd Ed, 2008) ch 2.

83 Parks and Trees (Preservation of Trees) Order 1991 (S 327/1991). See Joseph Chun, "Enhancing the Garden City: Towards a Deeper Shade of Green" (2006) 18 SAcLJ 248.

84 The maximum penalty at the time of the offence was a fine of $10,000. This fine was later raised to $50,000 under s 13 of the new Parks and Trees Act 2005 (Act 4 of 2005) in 2005, which is "[a]n Act to provide for the planting, maintenance and conservation of trees and plants within national parks, nature reserves, tree conservation areas, heritage road green buffers and other specified areas, and for matters connected therewith". See Alexis Hooi, "Axe trees illegally? Bigger fine likely.", *The Straits Times* (27 Oct 2004). It should be noted that s 54 Parks and Trees Act (Cap 216, 2006 Rev Ed) provides certain presumptions and defences.

named.[85] It was situated in the compound of a chalet owned by the government, and was estimated to be more than a century old. However, in November 2002 this tree was felled by a property management company, DTZ Debenhem Tie-Leung, whose manager thought the tree posed a danger to two houses.[86] Strong public responses followed, condemning this act.[87] The company was fined $8,000 for cutting down the tree. It was also made to pay $76,035 to the State as damages.[88] However, it is clear that had the tree been growing in another part of Singapore, not within the protection of the Parks and Trees (Preservation of Trees) Order 1991, there would not have been any offence committed even if it was the last tree of its species. It is submitted that this is highly unsatisfactory.

33 Consonantly with the principle of stewardship, landowners (whether private or public) should be bound by higher responsibilities as regards rare and endangered species of vegetation or wildlife found on their land. The general rights of absolute ownership and "dominium" should not extend to rare and endangered species, whether flora or fauna. Legislation should extend protection to rare plants beyond the two tree-conservation sites and heritage green-buffer zones. The precautionary principle should apply to any proposed development on the site. An environmental impact assessment ("EIA") should be undertaken and any proposed action by the landowner to remove or destroy such animals or plants should be prohibited until a comprehensive EIA has been undertaken. This will necessitate an examination of the number of species and specimens that will be adversely impacted and a consideration of possible alternatives to the proposed project, including the "do not proceed' alternative. The EIA should be open to inspection by the public, who should be allowed to present their views. These laws should be reinforced by an understanding that rare and endangered species belong to the public or

85 The tree was found when a group of concerned scientists and nature lovers responded to the Rustic Coast Draft Concept Plan unveiled by the Urban Redevelopment Authority ("URA") and invited public feedback. A call was made by the editor of Habitatnews to submit information on Changi's heritage. A submission entitled "Significant trees and shrubs in Changi" disclosed that a single Changi tree still survived. See <http://habitatnews.nus.edu.sg/heritage/changi/changitrees/index.html> (accessed 2 December 2009).

86 See <http://habitatnews.nus.edu.sg/heritage/changi/changitrees/hopeasangal-20nov2002/firstpage.html> (accessed 2 December 2009).

87 See <http://habitatnews.nus.edu.sg/heritage/changi/changitrees/hopeasangal/hopeasangal-news.html> (accessed 2 December 2009).

88 It is unclear how the quantum of damages was arrived at. Concerned citizens tracked down the logs. They were later turned into sculptures sponsored by donors, and displayed at the Wildlife Reserve, Singapore Zoological Gardens. See "The Hopea Sangal Tree – A Timeline" <http://habitatnews.nus.edu.sg/heritage/changi/changitrees/hopeasangal/hopeasangal-timeline.html> (accessed 2 December 2009).

the State (as representing the public), as beneficiaries under a public trust.

IV. The public trust, environmental impact assessments and public participation

34 The public trust (or *ius publicum*) finds its origin in Roman law, where it was recognised that all rivers and ports, river banks and shores were public places (*res communes)*, so that everyone was free to fish in a port or river, or to navigate and sail as well as moor their ships.[89] The concept of *res communes* found its way to English law, where it was acknowledged to be part of natural law.[90] The doctrine of public trust was applied in the United States, which recognised that lands beneath the foreshore and navigable waters were held on a trust for public purposes, for the benefit of the public at large, and particularly for navigation and fishing.[91] But it was the landmark case of *Illinois Central Railroad Co v State of Illinois*[92] that brought the doctrine to the fore. Here a large area of the Chicago harbour front (including the submerged lands in the harbour) was granted by legislation to the Illinois Central Railroad, its successors and assigns, to be held in perpetuity, but without the power to grant, sell or convey the fee simple. The grant was later rescinded by the legislature after an apparent change of mind, and a lawsuit ensued by way of challenge to this rescission. The US Supreme Court held that the State of Illinois held navigable waters and the land underlying navigable waters on trust for its citizens, so that they could navigate and fish freely in Lake Michigan. The State could not abdicate its trust over property in which the public was interested, so as to leave this property entirely within the use and control of private parties who could effectively destroy the rights of the public. On the facts, the grant was too wide, effectively empowering the railroad company to delay indefinitely the improvement of the harbour or to

89 "By the law of nature, these things are common to mankind – the air, running water, the sea, and consequently the shores of the sea … All rivers and ports are public; hence the right of fishing in a port, or in rivers, is common to all men.": *The Institutes of Justinian* (Thomas C Sandar trans) (Longmans, Green & Co, 9th Ed, 1956) at p 91.

90 "By natural law, these are common to all: running water, air, the sea, and the shores of the sea, as though accessories of the sea … All rivers and ports are public, so that the right to fish therein is common to all persons. The use of river banks, as of the river itself, is also public by the *jus gentium* [and] consequently, everyone is free to moor ships to them, to fasten ropes to the trees growing therein and to land cargoes upon them, just as he is free to navigate the river itself.": Henry de Bracton, *Bracton on the Laws and Customs of England* vol 2 (Samuel E Thorne, trans) (Harvard University Press, 1968) at pp 39–40.

91 See *Shively v Bowlby* 152 US 1 (1894), which provides an overview of the concept of the public trust and the way in which it has been applied in the United States.

92 149 US 387 (1892).

construct as many docks, piers, wharfs and other structures as it might choose, and at such positions in the harbour as might suit its purposes. The grant also permitted any kind of business to be conducted in the area and allowed the company to grant leases on its own terms and for indefinite periods. The grant, being to a private corporation, was therefore held void or at least revocable.[93]

35 In 1970, the American academic Sax brought the public trust into renewed focus in his celebrated article, "The Public Trust Doctrine in Natural Resources Law".[94] He had also raised the same issue in the context of compulsory land acquisition by the State (a "takings" issue),[95] and in relation to the wise use of ecological resources.[96] Sax's legal scholarship drew attention to US cases that had applied the public trust. Sax sought to persuade us that:

> [C]ertain issues are so intrinsically important to every citizen that their free availability tends to mark the society as one of citizens rather than of serfs … An allied principle holds that certain interests are so particularly the gift of nature's bounty that they ought to be reserved for the whole of the populace … Finally, there is often a recognition, albeit one that has been irregularly perceived in legal doctrine, that certain uses have a peculiarly public nature that makes their adaptation to private use inappropriate …[97]

36 Today, American courts have expanded the doctrine of the public trust beyond its traditional application to navigable rivers and waters so as to allow public recreational access to wild country, national parks, as well as to beaches and tidelands.[98] Sax argued that the public trust should break away from its "historical shackles" and that it should be extended to a wide range of environmental concerns including air and water pollution, the dissemination of pesticides, radioactivity,

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93 "The legislature could not give away nor sell the discretion of its successors in respect to matters, the government of which, from the very nature of things, must vary with varying circumstances.": *Illinois Central Railroad Co v State of Illinois* 149 US 387 (1892) at 460.

94 68 Mich L Rev 471 (1970). See Carol M Rose, "Joseph Sax and the Idea of the Public Trust" *Issues in Legal Scholarship*, Joseph Sax and the Public Trust (2003): Article 8.

95 Joseph L Sax "Takings, Private Property and Public Rights" (1971) 81 Yale LJ 149 at 155 and nn 16 and 171.

96 See "The Public Trust: A New Charter of Environmental Rights" in Joseph L Sax, *Defending the Environment* (Knopf Publishing, 1971) at pp 158 and 172.

97 Joseph L Sax, *Defending the Environment* (Knopf Publishing, 1971) at pp 484–485.

98 *Diversion Lake Club v RW Heath* 86 SW2d 441 (1935) at 444; *National Audubon Society v Superior Court of Alpine County* 658 P2d 709 (1983) at 718–721; *Adirondack League Club Inc v Sierra Club* 706 NE2d 1192 (NY 1998) at 1195; *Marks v Whitney* 491 P 2d 374 (1971).

congestion, noise, strip mining, and the destruction of natural areas and open space.[99]

37 The public trust doctrine is particularly useful because it conceptualises a property right in the general public as beneficiaries of the trust, it is enforceable against the authorities, and it has the capacity to be interpreted consistently with contemporary concerns for environmental quality.[100] Sax cautioned that the State and its agencies should subordinate the public right to private rights only when it is necessary and in the public interest to do so.[101] It should be noted that the State can bring the public trust to an end through its legislature,[102] and that while the concept of the public trust has enabled the public, as beneficiaries of the trust, to challenge public projects, its imposition on a private owner may amount to a compensable "taking" under the US Constitution.[103]

38 The public trust doctrine has been accepted in other jurisdictions. In India, whose Supreme Court is noted for its "judicial activism" in the context of environmental cases, the case of *M C Mehta v Kamal Nath*[104] is particularly notable. Here, a river bank was leased to a corporation for the building of a motel. The developers sought to change the course of the river. The Supreme Court referring extensively to US cases and Sax's seminal article, applied the concept of the public trust and stopped the project, stating:

> Our legal system – based on English common law – includes the public trust doctrine as part of our jurisprudence. The State is the trustee of all natural resources which are by nature meant for public use and enjoyment. The public at large is the beneficiary of the sea-shore, running waters, air, forests and ecologically fragile lands. The State as a trustee is under a legal duty to protect the natural resources. These resources meant for public use cannot be converted into private ownership.

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99 Joseph L Sax, "Liberating the Public Trust Doctrine from its Historical Shackles" in *Environmental Law* (Michael C Blum ed) (Dartmouth Publishing, 1992) at p 169.

100 "Public trust problems are found whenever governmental regulation comes into question, and they occur in a wide range of situations in which diffused public interests need protection against tightly organized groups with clear and immediate goals.": Joseph L Sax, "The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention" (1970) 68 Mich LR 471 at 476.

101 Joseph L Sax, "The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention" (1970) 68 Mich LR 471 at 482.

102 *Marks v Whitney* 491 P2d 374 (1971) at 380–381.

103 Joseph L Sax, "Takings, Private Property and Public Rights" (1971) 81 Yale LJ 149; see also Kevin Gray, "Equitable Property" (1994) 47(2) CLP 157 at 188–214. For a recent article on the "takings" issue from the perspective of recent US and Australian decisions, see Kevin Gray, "There's No Place Like Home!" (2007) 11(1) Journal of South Pacific Law 73–88.

104 [1997] 1 SCC 388.

> We are fully aware that issues presented in this case illustrate the classic struggle between those members of the public who would preserve our rivers, forests, parks and open lands in their pristine purity and those charged with administrative responsibilities who, under the pressures of the changing needs of an increasingly complex society, find it necessary to encroach to some extent upon open lands, heretofore considered inviolate to change. The resolution of this conflict in any given case is for the legislature and not for the courts. If there is a law made by Parliament or the State legislatures, the courts can serve as an instrument of determining legislative intent in the exercise of its powers of judicial review under the Constitution. But *in the absence of any legislation, the executive acting under the doctrine of public trust cannot abdicate the natural resources and convert them to private ownership, or for commercial use. The aesthetic use and pristine glory of the natural resources, the environment and the ecosystems of our country cannot be permitted to be eroded for private, commercial or any other use unless the courts find it necessary, in good faith, for the public good and in public interest to encroach upon the said resources.*[105]
>
> [emphasis added]

39 Two years later, the public trust doctrine was again endorsed by the Indian Supreme Court in the case of *M I Builders Pvt Ltd v Radhey Shyam Sahu*.[106] Here a builder was given permission by a city corporation, to build an underground shopping complex in a park of historical importance. The Supreme Court, applying *M C Mehta v Kamal Nath*, held the corporation to be in breach of its duty under a public trust, as the development would qualitatively destroy the "true nature of the park, as it existed".

40 The public trust has also been brought into play in Australia, not least for the purpose of protecting the foreshores of Port Jackson and Sydney harbor from coal mining in the 19th century.[107] It was applied more recently in *Willoughby City Council v Minister Administering the National Parks and Wildlife Act*.[108] Here the grant of a lease for the purpose of building a tea room or reception facilities on land reserved as a state recreation area under the National Parks and Wildlife Act 1974 was held to be in breach of planning laws. The lessee was ordered to demolish the partly-completed building and reinstate the site to its original condition. Stein J found that the Minister and Director of the National Parks and Wildlife Service held the land on trust for the enjoyment and benefit of its citizens, stating:

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105 [1997] 1 SCC 388 at 413.

106 AIR 1999 SC 2468.

107 *Re Sydney Harbour Collieries Co Ltd* (1895) 5 Land App Ct Cas 243, see also Tim Bonyhady, "A Usable Past: The Public Trust in Australia" (1995) 12 EPLJ 329.

108 (1992) 78 LGERA 19.

> It is clear from the legislation that national parks are held by the State in trust for the enjoyment and benefit of its citizens, including future generations. In this instance the public trust is reposed in the Minister, the director and the National Parks and Wildlife Service. These public officers have a duty to protect and preserve national parks and exercise their functions and powers within the law in order to achieve the objects of the National Parks and Wildlife Act.[109]

41 Should Singapore accept this concept of the Public Trust?[110] Who are the beneficiaries of this trust? How can it be enforced?

A. Beneficiaries of the public trust – Issues of locus standi *and future generations*

42 In *Sierra Club v Morton*[111] the Sierra Club (the "Club"), an environmental NGO, brought an action to stop the building of a ski resort in the pristine Mineral King Valley inside Sequoia National Forest. The US Supreme Court held that the Club did not have sufficient *locus standi* to sue as it had failed to show that any of its members used or enjoyed the area and had thereby suffered injury or damage. Although the Club lost that case, it was clear that the US courts would recognise as having *locus standi* any individuals (or a club representing them) who could show that they had suffered or would suffer particular injury by reason of any proposed act. The most notable judgment was delivered by Justice William O Douglas, who said, in dissent:

> The critical question of 'standing' would be simplified and also put neatly in focus if we fashioned a federal rule that allowed environmental issues to be litigated before federal agencies or federal courts in the name of the inanimate object about to be despoiled, defaced, or invaded by roads and bulldozers and where injury is the subject of public outrage. Contemporary public concern for protecting nature's ecological equilibrium should lead to the conferral of standing upon environmental objects to sue for their own preservation. This suit would therefore be more properly labelled as *Mineral King v Morton*.
>
> Inanimate objects are sometimes parties in litigation. A ship has a legal personality, a fiction found useful for maritime purposes. The corporation sole – a creature of ecclesiastical law – is an acceptable adversary and large fortunes ride on its cases. The ordinary corporation is a 'person' for purposes of the adjudicatory processes,

109 (1992) 78 LGERA 19 at 34. See also Paul Stein, "Ethical issues in land use planning and the public trust" (1996) 13 EPLJ 493.

110 See Joseph Chun, "Reclaiming the Public Trust in Singapore" (2005) 17 SAcLJ 717; also Joseph Chun, "Beyond Real Estate: Sowing the Legal Seeds for Ethical Public Stewardship in Singapore" 3 Macquarie J Int'l & Comp Envtl L (2006) 1.

111 403 US 307 (1972).

> whether it represents proprietary, spiritual, aesthetic, or charitable causes.
>
> So it should be as respects valleys, alpine meadows, rivers, lakes, estuaries, beaches, ridges, groves of trees, swampland, or even air that feels the destructive pressures of modern technology and modern life. The river, for example, is the living symbol of all the life it sustains or nourishes – fish, aquatic insects, water ouzels, otter, fisher, deer, elk, bear, and all other animals, including man, who are dependent on it or who enjoy it for its sight, its sound, or its life. The river as plaintiff speaks for the ecological unit of life that is part of it. Those people who have a meaningful relation to that body of water – whether it be a fisherman, a canoeist, a zoologist, or a logger – must be able to speak for the values which the river represents and which are threatened with destruction …
>
> The voice of the inanimate object, therefore, should not be stilled. That does not mean that the judiciary takes over the managerial functions from the federal agency. It merely means that before these priceless bits of Americana (such as a valley, an alpine meadow, a river, or a lake) are forever lost or are so transformed as to be reduced to the eventual rubble of our urban environment, the voice of the existing beneficiaries of these environmental wonders should be heard.

43 *Locus standi* for NGOs has been recognised in certain Asian jurisdictions. In *Dr Mohuiddim Farooque v Bangladesh*[112] an environmental NGO, the Bangladesh Environmental Lawyers Association ("BELA") led by Dr M Farooque (as Secretary-General) was held to have *locus standi* to bring an action against the proposed construction of an ill-conceived flood alleviation plan. Mustafa Kamal J said, "In so far as it concerns public wrong or public injury or invasion of fundamental rights of an indeterminate number of people, any member of the public, being a citizen, suffering the common injury or common invasion in common with others or any citizen or an indigenous association, as distinguished from a local component of a foreign organization, espousing that particular cause is a person aggrieved and has the right to invoke the jurisdiction under Article 102 of the Constitution."

44 It is particularly interesting that the judge in *Willoughby* mentioned that the trust was "for the enjoyment and benefit of its citizens, including future generations", thus indicating that future generations are recognised as beneficiaries under the public trust. This seems to extend the recognition of *locus standi* to unborn generations,

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112 Civil Appeal No 24 of 1995, Bangladesh. See also Ehsanul Habib, "Public interest environmental litigation: A Tool to ensure compliance and enforcement" <http://www.inece.org/5thvol1/habib.pdf> (accessed 2 December 2009); Jona Razzaque, *Public Interest Litigation in India, Pakistan and Bangla Desh* (Kluwer Law International, 2004).

surely a radical departure from conventional perspectives on legal standing, but fully consonant with the principles of environmental law which emphasises intra-generational and inter-generational equity.

45 The issue of the rights of future generations to the environment was closely examined by Prof Edith Brown Weiss in her 1989 book *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity*.[113] The term "sustainable development" has been defined by the Brundtland Commission as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[114] Future generations are recognised in Principle 3, Declaration of the United Nations Conference on Environment and Development, Rio de Janeiro, 1992, which states "The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations."[115]

46 The decision of the Supreme Court of the Philippines in the case of *Oposa (Minors) v Factoran, Secretary of State for the Environment and Natural Resources*[116] continues to be hailed today as recognising that

113 *Innovation in International Law* (Richard Falk gen ed) (The United Nations University, Tokyo, Japan, and Transnational Publishers Inv, New York, 1988). See also Edith Brown Weiss, "The Planetary Trust: Conservation and Intergenerational Equity" (1984) 11 Ecology LR 495; Catherine Redgwell, *Intergenerational Trusts and Environmental Protection* (Juris Publishing, Manchester University Press, 1999); G Kavka, "The Futurity Problem" in *Obligations to Future Generations* (R I Sikora & B Barry eds) (Temple University Press, Philadelphia, 1978); M Golding, "Obligations to Future Generations" in *Responsibilities to Future Generations* (E Partridge ed) (Prometheus Books, New York, 1981).

114 *Our Common Future*, Report of the World Commission on Environment and Development (Oxford University Press, 1987) at p 43. Often referred to as the "Brundtland Commission", after the name of its Chair, Gro Harlem Brundtland, then Prime Minister of Norway, the Commission was convened by the United Nations in 1983 to address growing international concern "about the accelerating deterioration of the human environment and natural resources and the consequences of that deterioration for economic and social development". The Commission's recommendations led to the Earth Summit – the United Nations Conference on Environment and Development ("UNCED") in Rio de Janeiro in 1992. See <http://www.un.org/geninfo/bp/enviro.html> (accessed 2 December 2009). This was ten years after the Stockholm Conference on the Human Environment. Ten years after the Earth Summit, world leaders met again to discuss the environment at the World Summit on Sustainable Development held at Johannesburg. See <http://www.un.org/events/wssd/> (accessed 2 December 2009).

115 See <http://www.unep.org/Documents.Multilingual/Default.asp?documentID=78&articleID=1163#> (accessed 2 December 2009).

116 GR No 101083 (30 July 1993), Supreme Court of the Philippines, 33 ILM 173 (1994); see <http://www.lawphil.net/judjuris/juri1993/jul1993/gr_101083_1993.html> (accessed 2 December 2009). See also Dante B Gatmaytan, "The Illusion of intergenerational equity: *Oposa v Factoran* as pyrrhic victory" Georgetown International Environmental Law Review 15.3 (2003): 457–485.

unborn generations have a right to the environment, a right that assures them *locus standi*. Here, the petitioners were 44 minor children who sued the Secretary of the Department of Environment and Natural Resources (on behalf of themselves and future generations) to halt the further issue of timber licences, on the grounds that future generations of Filipino children would be deprived of a Philippine forest if logging were allowed to continue unabated. In the words of Davide CJ:

> We find no difficulty in ruling that they can, for themselves, for others of their generation and for the succeeding generations, file a class suit. Their personality to sue in behalf of the succeeding generations can only be based on the concept of intergenerational responsibility insofar as the right to a balanced and healthful ecology is concerned. Such a right, as hereinafter expounded, considers the 'rhythm and harmony of nature.' Nature means the created world in its entirety. Such rhythm and harmony indispensably include, *inter alia*, the judicious disposition, utilization, management, renewal and conservation of the country's forest, mineral, land, waters, fisheries, wildlife, off-shore areas and other natural resources to the end that their exploration, development and utilization be equitably accessible to the present as well as future generations. Needless to say, every generation has a responsibility to the next to preserve that rhythm and harmony for the full enjoyment of a balanced and healthful ecology. Put a little differently, the minors' assertion of their right to a sound environment constitutes, at the same time, the performance of their obligation to ensure the protection of that right for the generations to come …
>
> While the right to a balanced and healthful ecology is to be found under the Declaration of Principles and State Policies and not under the Bill of Rights, it does not follow that it is less important than any of the civil and political rights enumerated in the latter. *Such a right belongs to a different category of rights altogether for it concerns nothing less than self-preservation and self-perpetuation – aptly and fittingly stressed by the petitioners – the advancement of which may even be said to predate all governments and constitutions. As a matter of fact, these basic rights need not even be written in the Constitution for they are assumed to exist from the inception of humankind.* If they are now explicitly mentioned in the fundamental charter, it is because of the well-founded fear of its framers that unless the rights to a balanced and healthful ecology and to health are mandated as state policies by the Constitution itself, thereby highlighting their continuing importance and imposing upon the state a solemn obligation to preserve the first and protect and advance the second, the day would not be too far when all else would be lost not only for the present generation, but also for those to come – generations which stand to inherit nothing but parched earth incapable of sustaining life. The

right to a balanced and healthful ecology carries with it the correlative duty to refrain from impairing the environment.[117]

[emphasis added]

B. Applying the public trust: the EIA and public participation

47 How then, can we apply the public trust in practice? Sax calls for three "baseline democratic values": First, an open process of decision making, which requires that information be sought for. This objective is now achieved through the mechanism of the environmental impact assessment.[118] A second step requires the public release of this information, followed by the third step of public participation, a process for the public to convey its responses to decision makers. Often, in this process, specialist NGOs such as nature groups can convey important information to the government, enabling the latter to make a more fully informed decision. The Aarhus Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters now enshrines Sax's recommendations.[119]

48 The participation of the public is an integral part of environmental impact assessments. Principle 10 of the Rio Declaration states:

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117 The next step is for courts to extend legal standing to natural objects – trees, rivers, plants and animals – an argument put forward by Christopher Stone as early as 1972 in his seminal article, "Should Trees have Standing? – Toward Legal Rights for Natural Objects" (1972) 45 S Cal L Rev 450.

118 "Impact assessment is not just desirable; it is a crucial element in legitimating risky environmental decisions.": Joseph L Sax, "The Search for Environmental Rights" [1990–1991] 6 J Land Use & Envtl L 93 at 98. Indeed, calls for mandatory environmental impact assessments have appeared in numerous international conventions as well as soft law instruments. Principle 17, Rio Declaration on Environment and Development, states, "Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority." UN Conference on Environment and Development at Rio de Janeiro (3–14 June 1992), also known as "The Earth Summit". The Rio Declaration also calls for public participation (Principle 10) and application of the Precautionary Principle (Principle 15). See <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=78&ArticleID=1163> (accessed 2 December 2009). Agenda 21, the programme of action developed at the Earth Summit, emphasised public participation at all levels (Part III, ch 24–32). Article 14 of the ASEAN (Association of Southeast Asian Nations) Agreement on the Conservation of Nature and Natural Resources (1985) specifically calls for impact assessments. However, the Agreement, which was signed by the then six nations making up ASEAN in 1985 is not yet in force, as only three nations have ratified it. See <http://www.aseansec.org/1490.htm> (accessed 2 December 2009).

119 The Aarhus Convention was adopted on 25 June 1998 by the United Nations Economic Commission for Europe ("UNECE") and has been lauded as "a pillar of environmental democracy". See <www.aarhus.be> (accessed 2 December 2009).

> Environmental issues are best handled with participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

49 The environmental impact assessment or EIA is based on the principle of "look before you leap" and, like the concept of intergenerational equity, is entrenched in all modern multilateral environmental agreements, soft law instruments as well as hard law regional agreements.[120] State parties to these agreements are expected to pass national laws to set up a system for the mandatory conduct of EIAs before development projects are allowed. Thus, Principle 17 of the Rio Declaration states "Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority." EIAs are also required under Art 14 of the Convention on Biological Diversity ("CBD"), 1992[121] and under Art 14 of the Association of Southeast Asian Nations Agreement on Nature and Natural Resources.[122] However, not all States

120 See United Nations Environment Programme activities in environmental assessments <http://www.unep.org/themes/assessment/> (accessed 2 December 2009).

121 Article 14 of the Convention on Biological Diversity (1992) reads as follows:

> Impact assessments and Minimizing adverse impacts
>
> 1. Each Contracting Party, as far as possible and as appropriate, shall: (a) Introduce appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects and, where appropriate, allow for public participation in such procedures; (b) Introduce appropriate arrangements to ensure that the environmental consequences of its programmes and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account …

See <http://www.cbd.int/convention/articles.shtml?a=cbd-14> (accessed 2 December 2009).

122 Article 14 of the Association of Southeast Asian Nations Agreement on Nature and Natural Resources (9 July 1985) reads as follows:

> Impact assessments
>
> (1) The Contracting Parties undertake that proposals for any activity which may significantly affect the natural environment shall as far as possible be subjected to an assessment of their consequences before they are adopted, and they shall take into consideration the results of this assessment in their decision-making process.
>
> (2) In those cases where any such activities are undertaken, the Contracting Parties shall plan and carry them out so as to overcome or minimize any

(*cont'd on the next page*)

have passed EIA laws and, as we shall soon see, Singapore has no laws mandating EIA.

50 The need to first carry out an EIA is an example of the implementation of the precautionary approach advocated by environmental lawyers and, again, is enshrined in environmental hard law and soft law instruments. Thus, Principle 15 of the Rio Declaration states:

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

51 Thus, a well-drafted law on EIAs should contain provisions for the public to participate in the process, particularly first, by allowing the public access to the report of the consultants, and second, by allowing the public to give their views on the project (including an opposing view). Indeed, the right of the public to participate is a natural corollary of their status as beneficiaries under a public trust.

(1) Application in Singapore

52 Singapore does not have any laws mandating environmental impact assessments. The nearest equivalents are found in ss 26 and 36 of the Environmental Protection and Management Act ("EPMA"), 1999.[123] Section 26 empowers the Director-General of Pollution Control to require the owner or occupier of hazardous installations to carry out impact analysis studies. Section 36 empowers the Director-General to require any person to carry out an "environmental pollution control study". It is unclear when and in what circumstances the s 36 study will be required – does it apply to a proposed golf course, for example? The National Environment Agency has issued a Code of Practice on Pollution Control, together with other Codes of Practice and Guidelines, which states that developers of special industries (these are listed in Appendix 4 of the Code and relate to industries which are highly pollutive) may be required to conduct a Quantitive Risk Assessment ("QRA") Study or a Pollution Control Study.[124] While the latter clearly refers to a s 36 study, there is no reference to a QRA study in the EPMA. Is the QRA study similar to the impact analysis study under s 26? What

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> assessed adverse effects and shall monitor such effects with a view to taking remedial action as appropriate.

See <http://www.aseansec.org/1490.htm> (accessed 2 December 2009).

123 Act 9 of 1999, now Cap 94A, 2002 Rev Ed.

124 See <www.nea.gov.sg>; <http://app2.nea.gov.sg/resources_home.aspx> (accessed 2 December 2009).

is clear is that neither of these studies qualifies as an environmental impact study, as both are narrowly confined to pollution impacts only.

53 In practice, EIAs are conducted on an *ad hoc* basis by the relevant authorities. As no laws exist mandating EIAs, there is no legal requirement for public consultation. This has caused considerable difficulties for the Nature Society Singapore in a number of cases where proposed development projects threatened the existing ecology. Two cases stand out – first, the proposal in 1992 to take away part of the Lower Peirce Reservoir, a legally protected nature reserve, to build a golf course for the public; and second, a proposal ten years later to reclaim a stretch of ecologically sensitive beach at Chek Jawa[125] on the offshore island of Pulau Ubin, for military purposes.

54 In the former case, the government commissioned an EIA but refused to show it to the Nature Society, whereupon the Society conducted its own EIA and published the results.[126] In the case of Chek Jawa, the Urban Redevelopment Authority, in a reply to the President of the Nature Society via the Straits Times Forum page, disclosed that it had commissioned a study which revealed that the area was not worthy of protection. The sea grass was patchy; there was no resident population of dugongs; and the area did not have an established coral reef or reef communities worthy of preservation.[127] However, the Nature Society claimed that the area was a pristine ecological site with at least six different eco-systems all within that tiny beach. Fortunately, the authorities decided to stop both projects. In the case of Chek Jawa, the Ministry of National Development issued a statement that it would put off the reclamation of Pulau Ubin "for as long as the island is not required for development".[128]

55 While no damage was done to the Lower Peirce Reservoir site, as it was legally protected under the then National Parks Act (now the Parks and Trees Act 2005), the same cannot be said of Chek Jawa. Many who visited it took home souvenirs of sea shells, star fish and other creatures, as it appeared that reclamation was imminent, particularly as the vehicle for reclamation had already been commissioned and was anchored offshore in full view of the visitors. The National Parks Board has since taken charge of Chek Jawa and spent several million dollars building a boardwalk and facilitating controlled access to the site as well as restoring and rehabilitating the site. Today, it conducts tours to Chek

125 See <http://chekjawa.nus.edu.sg/ria/index.html> (accessed 2 December 2009).

126 *Proposed Golf Course at Lower Peirce Reservoir – An Environmental Impact Study* (Y C Wee ed) (Nature Society Singapore, 1992).

127 Ang Hwee Suan, "Chek Jawa Reclamation Decided after Careful Study", *The Straits Times* (27 July 2001).

128 Lydia Lim, "Reprieve for Rustic Ubin", *The Straits Times* (15 January 2002).

Jawa.[129] However, Chek Jawa is still not legally protected: it continues to be zoned as a "reserve site" under the Master Plan.

56 The Chek Jawa controversy has been closely examined by Joseph Chun in his article "Reclaiming the Public Trust in Singapore".[130] Chun argues that following the reasoning of Stein J in the *Willoughby City Council* case, as a matter of statutory construction, Parliament must have intended to create a "public trust" when lands are set aside and entrusted to the National Parks Board under the Parks and Trees Act for the specified purposes therein. The statutory powers of the Board "must be interpreted narrowly if it tries to alter the nature of these lands, or subordinate the public purposes of these lands to private utilisation and enjoyment, for example, by developing golf courses on these lands".[131] Similarly, he argues that the Minister's power under s 62(1) of the Act to order the amendment of the scheduled designations of lands under the Act should be narrowly construed, and any such orders must be "explicitly justified before Parliament".[132] Chun concludes:

> As the Chek Jawa case study shows, the public trust doctrine is a particularly useful legal tool for improving environmental governance in Singapore, as it provides citizens with the legal vocabulary with which to articulate their environmental concerns in the common interest. By characterising certain valued natural resources as part of the public commons, and the State's dominion over these resources as one of public trusteeship rather than ownership, the doctrine offers a means to legally require greater transparency and openness in the decision-making process when the State proposes to alienate or change the common use of these lands, apparently to the detriment of the common interest of the public.[133]

57 It should be emphasised that more than just providing the citizens with the "legal vocabulary", the public trust concept necessarily confers on the public a "beneficial interest" in the lands, thus giving them the necessary legal standing (*locus standi*) to challenge any attempt to take the lands away. This issue has never been tested in a Singapore court although, as we have seen, it has found favour with the Philippines Supreme Court, the New South Wales Land and Environment Court in the *Willoughby* decision, and also some US courts. It remains to be seen how a Singapore court will decide if the issue should ever arise.

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129 See <http://www.nparks.gov.sg/cms/popup/pulau-attractions.html> (accessed 2 December 2009).

130 (2005) 17 SAcLJ 717.

131 (2005) 17 SAcLJ 717 at 742. It should be noted that the proposed golf course at Lower Peirce Reservoir was lauded as having a strong public element in that it was to be a public golf course.

132 (2005) 17 SAcLJ 717 at 743.

133 (2005) 17 SAcLJ 717 at 744.

58 Chun then makes his second point that "more importantly in the context of Singapore, the public trust doctrine shifts the onus of proof. Instead of requiring opponents to justify their objections to a proposal that *prima facie* alienates a public trust resource or impairs a protected use of the resource, it is the proponents who have to bear the burden of showing either that the public trust purpose will in fact not be significantly impaired or that the proposed alienation or impairment of use is necessary and in the public interest".[134] He anticipates that "an increasingly sophisticated public will come to expect more open and transparent environmental governance, and demand a right to hold the state accountable for decisions that impair or threaten to impair the common heritage of these natural resources …".[135] Indeed, taking the public trust concept to its natural ambit, a proposal that serves to destroy property that is subject to a public trust must, *ipso facto*, be a breach of this trust. It should also follow that NGOs like the Nature Society should be recognised as beneficiaries under this trust and be accorded legal standing before the courts.

59 In Singapore today, access to some EIA reports has been given to certain NGOs such as the Nature Society, for their feedback. In 2006, an EIA was published electronically, via Government Gazette Notification, and members of the public were invited to view it for four weeks. This was an EIA done by the Jurong Town Corporation for the reclamation of three southern islands for industrial use.[136] The fact remains that sharing the EIA report with members of the public (including environmental NGOs) is entirely at the discretion of the government. There has been no indication so far that legislation will be passed mandating environmental impact assessments.

60 As landowner, the Singapore government continues to reclaim the foreshores, thus causing considerable damage to the marine environment. But laws to protect the marine environment hardly exist.[137] New development projects continue unabated, but there is no indication that a law mandating the conduct of environmental impact assessment studies with attendant rights of public participation will be passed. Can concerned citizens, using the argument of the public trust, compel the government to pass laws that they deem necessary to protect the

134 (2005) 17 SAcLJ 717 at 745.

135 (2005) 17 SAcLJ 717 at 745.

136 This was noted in Lye Lin Heng, "Nature Conservation Laws – The Legal Protection of Flora and Fauna in Singapore" in *The Singapore Red Data Book – Threatened Plants and Animals of Singapore* (G W H Davison, P K L Ng & H C Ho eds) (Nature Society, Singapore, 2nd Ed, 2008) at pp 5–13, n 40.

137 See Lye Lin Heng, "A Fine City in a Garden – Environmental Law and Governance in Singapore" [2008] Sing JLS 68 at 108–114; *The Singapore Red Data Book – Threatened Plants and Animals of Singapore* (G W H Davison, P K L Ng & H C Ho eds) (Nature Society, Singapore, 2nd Ed, 2008).

environment? It is unclear whether the public trust will be recognised in Singapore. This can only be tested by an action in court, which appears unlikely, given that it is not in the nature of civic groups in Singapore to be confrontational.

V. The future – Incorporating ethics and expanding the concept of the public trust

61 It can be seen that Singapore's laws are clearly inadequate to protect its natural environment. This is primarily due to the lack of appreciation for environmental concerns in development projects, which are approved without mandatory environmental impact assessments or public consultations.

62 There is much to be said for endorsing Joseph Chun's call for Singapore's land management authorities to be subject to a land ethic, which flows from viewing the State as an ecological steward.[138] These authorities would include not just the National Parks Board, but also the AVA, the Singapore Land Authority ("SLA"), and even the Land Transport Authority. The SLA is responsible for land allocation and is a statutory board under the Ministry of Law. It is responsible for the management of state land and buildings, land sales, leases, acquisitions and allocation, developing and marketing land-related information and maintaining the national land information database.[139] The first "function and duty" of the SLA is "to optimise land resources".[140] In the carrying out of its functions, it is required to:

> (a) have regard to efficiency and economy and to the social, industrial, commercial and economic needs of Singapore; and
>
> (b) as far as practicable, promote, develop and provide facilities or services that facilitate or are necessary for land planning, land infrastructure development and maintenance and the economic growth in Singapore.[141]

63 There is no mention of environmental considerations. While it is acknowledged that land in tiny Singapore is an extremely important and valuable resource, it should also follow that, precisely because of its scarcity, its ecological functions and attributes must not be compromised and should, as far as possible, be safeguarded and preserved. There is thus a need for the legal system to incorporate a mandatory system for the identification and management of

138 See Joseph Chun, "Beyond Real Estate: Sowing the Legal Seeds for an Ethical Public Land Stewardship in Singapore" 3 Macquarie J Int'l & Comp Envtl L (2006) 1 at 26.

139 See <www.sla.gov.sg> (accessed 2 December 2009).

140 Section 6(1)(*a*) Singapore Land Authority Act (Cap 301, 2002 Rev Ed).

141 Section 6(2) Singapore Land Authority Act (Cap 301, 2002 Rev Ed).

ecologically sensitive lands, to provide for environmental impact assessments (including strategic environmental assessments), to institutionalise public participation, and to allow access to information and access to justice.

64 Here, two global instruments which emphasise the ethics of environmental governance should be mentioned. They are the World Charter for Nature,[142] which was adopted by United Nations member nation-states on 28 October 1982, and the Earth Charter.[143]

65 Sax in his latest article, appropriately titled "The Unfinished Agenda of Environmental Law"[144] said "The task of protecting adequately our remaining biological patrimony demands a robust development of the idea of common heritage, of things that belong to us as members of the world community, and that are entitled to protection at our behest in whatever particular ownership patterns they are held … The distinctive character of biodiversity … represents a novel challenge to our legal system, not simply in the technical task of formulating laws, but even in our understanding of the nature of the problem … The conclusion is inescapable that the notion of a common heritage that vitally needs protection is still woefully underdeveloped."[145]

66 Returning to the issue of property rights, Sax said that we need a legal system that can protect our common heritage, but this requires an understanding that property rights must "be adaptive to changing

142 See <http://www.un.org/documents/ga/res/37/a37r007.htm> (accessed 2 December 2009).

143 See <http://www.earthcharterinaction.org/content/pages/Read-the-Charter.html> (accessed 2 December 2009). See also *Reconciling Human Existence with Ecological Integrity: Science, Ethics, Economics and Law* (Laura Westra, Klaus Bosselmann & Richard Westra eds) (Earthscan, 2008); K Bosselman, "The Earth Charter and Global Environmental Governance" in *Global Environment: Problems and Policies* (K Jankowska Gupta, M Mait & K Bosselmann eds) (Atlantic Publ, New Delhi/India, 2007) at pp 55–100; P Taylor & K Bosselman, "The Earth Charter in the Classroom: Transforming the Role of Law" in *Education for Sustainable Development in Action – Good Practices using the Earth Charter* (UNESCO and Earth Charter International, San José, Costa Rica, 2007) at pp 147–150; <http://www.earthcharterinaction.org/resources/files/Good%20Practices%202%20Earth%20Charter%20Stories%20in%20Education%20Full%20Document.pdf> (accessed 2 December 2009); K Bosselman, "Ecological Justice and Law" in *Environmental Law for Sustainability: A Critical Reader* (B Richardson & S Wood eds) (Hart Publ Oxford, 2006) at pp 129–163; K Bosselman & P Taylor, "The Significance of the Earth Charter in International Law" in *Toward a Sustainable World: The Earth Charter in Action* (P Blaze Corcoran ed) (The Hague, Kluwer International, 2005) at pp 171–173.

144 Joseph L Sax, "The Unfinished Agenda of Environmental Law", Commemorative Lecture at the United Nations University, Tokyo, Japan (18 October 2007) in 14 Hastings W-Nw J Envt'l L & Pol'y 1 (2008).

145 Joseph L Sax, "The Unfinished Agenda of Environmental Law", Commemorative Lecture at the United Nations University, Tokyo, Japan (18 October 2007) in 14 Hastings W-Nw J Envt'l L & Pol'y 1 (2008) at 6 and 7–8.

public needs and to new technological and scientific knowledge". He reiterated that "property exists in a social context, and like all rights, its limits are described by the social exigencies of its time … The need to revise our conception of rights in the earth and its waters in order to re-invigorate the conception of the world as a commons, and of rights held in common, has a long way to go before it can flower fully … We need a more fully developed conception of land as habitat (and not solely as an object to be transformed and exploited for privatised benefit). Such changes call for an increased focus on land in terms of function rather than in terms of boundaries."[146]

67 It is submitted that if we are to regard biodiversity as our "common heritage", then there may be a need to disregard political boundaries and the doctrine of territorial sovereignty. Indeed, there is increasing recognition that there is a need for "planetary stewardship" in regard to global environmental problems. There is a need for international management of the global commons. Can we extend the concept of the trust beyond national borders? It may be necessary to do so. One example may be taken from the threat of bird flu (H5N1) during the period 2004 to 2007. Alarmed by news that bird flu may be spread by wild birds, some countries attempted to control it by culling wild birds, destroying their habitats, or displacing them from breeding and roosting grounds.[147] These actions done by one country may adversely affect the ecology of another country, if the birds are migratory species.[148] Does a country own its wildlife absolutely, or should this wildlife belong to the world community at large? Wildlife does not respect political or geographic boundaries.

68 It has been suggested that the institution of the United Nations should be restructured to create the office of an Environmental Trustee with competence to represent the interests of future generations in treaty negotiations and in subsequent monitoring of treaty compliance.[149] Certainly, recent multilateral environmental agreements are drafted with intergenerational considerations in mind. The way is

146 Joseph L Sax, "The Unfinished Agenda of Environmental Law", Commemorative Lecture at the United Nations University, Tokyo, Japan (18 October 2007) in 14 Hastings W-Nw J Envt'l L & Pol'y 1 (2008) at 9–11.

147 See Birdlife International's statement on Avian influenza, August 2007 at <http://www.birdlife.org/action/science/species/avian_flu/> (accessed 2 December 2009); also "Bird flu: 'Culling birds will not work'" (14 April 2005) <http://www.scidev.net/en/news/bird-flu-culling-birds-will-not-work.html> (accessed 2 December 2009).

148 The Convention on the Conservation of Migratory Species of Wild Animals (23 June 1979) (also known as the "CMS Convention" or "Bonn Convention") aims to conserve terrestrial, marine and avian migratory species throughout their range. See <http://www.cms.int/documents/convtxt/cms_convtxt.htm> (accessed 2 December 2009).

149 Catherine Redgwell, *Intergenerational Trusts and Environmental Protection* (Juris Publishing, Manchester University Press, 1999) ch 5.

open for us to reconceive the public trust to see how it may assist in the protection of our global heritage. It is submitted that the Environmental Trustee should also represent the interests of non-human species.[150]

VI. Conclusion

69 It is clear that the traditional concept of land ownership and the full rights of the landowner to do as he wishes to his land must give way today to wider concepts of stewardship. Such notions of stewardship rest upon a better understanding of the value of land and its physical functions, an understanding that comes with new scientific knowledge. The Roman concept of the public trust has been applied in some common law jurisdictions, an evolution brought about by a need to protect the environment. The recognition that future generations may have *locus standi* to bring an action for protection of the environment has led to the development of the intergenerational trust. Both are intrusions upon the traditional notions of "absolute" ownership, imposing, as it were, a trust on the landowner in appropriate circumstances. It remains to be seen whether this protection can extend beyond political borders.

70 These are challenging times for the environmental lawyer as well as the property lawyer. In Singapore, it is unclear if the courts are open to these new developments. It is hoped they will be tested in the near future. In the meantime, there is an increasing need for our laws to reflect ecological and ethical concerns, as a new era of land stewardship is now warranted.

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150 See Klauss Bosselmann, "The Way Forward: Governance for Ecological Integrity" in *Reconciling Human Existence with Ecological Integrity* (Laura Westra, Klauss Bosselmann & Richard Westra eds) (Earthscan, London and USA, 2008).