

“Social Darwinism, altruism & species extinction”

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SCENE ONE:

{A large assembly of important-looking people are seated within a vast conference hall; they are chatting excitedly amongst themselves and there seems to be a buzz in the air. A middle aged man briskly walks to the lecturn upon the stage before them and all talking ceases as they give their utmost attention to the man waiting to speak.}

Al Gore: Good evening ladies and gentlemen. My name is Al Gore and I am a former US Vice President and currently the chairman of *Generation Investment Management* – a firm that is focused on a new approach to sustainable investing.¹ More importantly, are you people whom sit gathered before me, of all ages, eras, nationalities, cultures and beliefs... you are global citizens from all walks of life and you are here today because you've had some influence in shaping the world we know today. However, the world we know today needs to be drastically reshaped again. Finally, ladies and gentlemen, the governments of the world have begun to listen to the doomed warnings scientists have been giving us for decades now. By all accounts, there is now universal consensus that the stresses and demands imposed by society upon our humble planet have far surpassed the capability of the world's natural resources to regenerate and replenish themselves to meet sustainability requirements; there are insufficient resources to meet the continued demands of the present world population, and it is for this reason that "collapse of society will inevitably occur"². We can solve the environmental crisis if we take action now³. Everyone in this room has different opinions and we need to workshop *all* of them; that way we will be able to educate the people of tomorrow: the world's children⁴. At the end of this convention, you will be required to instruct a class of young children on the information you have formulated amongst yourselves as most necessary to enable them to save our battered planet, Earth. I thank you for your co-operation and wish you good luck.

{Silence prevailed this speech, broken only by the soft murmur of Karl Marx translating the instructions into German for Adolf Hitler whom sat beside him in the third row. He finished translating just as a stern-looking woman took the stage}

Nancy Prew: Good evening, my name is Nancy Prew and I am head of the company *Speed Dating World*

¹ Information featured on Al Gore's website: <http://www.algore.com/>.

² The "inevitable collapse of society" owing to the extent of non-sustainability in the current world is detailed in Yong, Mulligan & Fukue's '*Geoenviornmental Sustainability*' (2007: p.1).

³ Paraphrased statement made by Al Gore taken from his website:
<http://www.algore.com/>.

⁴ By educating children about these issues at a young level, they will be more conscious of their ecological footprint and far more capable of improving environmental standards, thus going some way to improve the currently dismal levels of intergenerational equity.

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Wide. My services have been employed, not to help you find love in this strange environment, *{she pauses to smile briefly at the audience}* but to make it easier for you to discuss vital issues with your fellow global citizens effectively **immediately** despite the contrived circumstances. In the room through the doors on my right *{she gestures in air-hostess fashion}* a series of conversation-enhancing cubicles awaits. Under your current seats, you will each find a piece of paper with your name and seat allocation for the next room. Please make your way in an orderly fashion. Thank you.

SCENE TWO:

{A middle aged man is sitting patiently on one side of the small circular table in the middle of a tight cubicle. An elderly and pompous English scientist glances at the piece of paper in his hand, sits down in the spare chair and launches into conversation.}

Charles Darwin: Well I'm not entirely sure about this whole ordeal, I must say. I don't place much store in what these scientists say. In my time, scientists avidly believed the world was flat! *{chuckles pompously to himself}* Now I'm a scientist myself, *{he raises his eyebrows boastingly}* but self-taught I might add!⁵ So none of this wishy-washy **academic** business about society **collapsing** gets past me, *{he literally scoffs at the idea}* its just social Darwinism running its course - as it should. I have a right mind to insist these doomsday neigh-sayers sit down, familiarise themselves with my works and either put a cork in it or sod off! And as for the schooling of children serving as the grand solution to the worlds problems... I mean to say, "the school as a means of education to me was simply a blank"⁶. So, young chap, what do you make of it all?

Forrest Gump: Uh, well I's not so sure that I knows much abou' the shape o' the earth an' all that but what you was sayin' abou' school not bein' the best means o' teachin' everybody, well I certainly agree with that, 'cause when I was at school, "Sometimes I'd set there wile the teacher was talkin' an' I don't know what was goin' on in my mind... They'd let us paint with our fingers an' make little things, but mostly, it jus' teachin' us how to do stuff like tie up our shoes an' not slobber food or get wild an' yell an' holler an' throw shit around. They wadn't no book learnin' to speak of - 'cept to show us how to read street signs an' things like the difference between the Men's an' the Ladies' rooms"⁷.

{Charles seems utterly bewildered by Forrest's drawl, poor grammar, profane vocabulary and apparent lack of intellect. Wondering how such a slow-witted individual could possibly have influenced the world

⁵ Despite Darwin's strict classical education, he was never educated to become a scientist and instead did so instinctively, succeeding in the field only as a result of his passion for observing, collecting, note-taking and analysing the natural world (Stewart 2005: pp.5-9).

⁶ Charles Darwin is actually reported to have said these very same words(Stewart,2005: p.7).

⁷ Taken directly from Winston Groom's novel 'Forrest Gump' (1986) pp. 11-13.

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already, let alone have any insight into its most intricate environmental problems, Charles decides maybe an introduction would reveal what might be so special about this altogether lax individual.}

Charles Darwin: I see. *{Speaking more slowly}* So as I said, I am a scientist. I come from the English town of Shrewsbury⁸ in the 1800s. My name is Charles Darwin and I am the individual responsible for the revolutionary theory of evolution and natural selection. *{He dons a doubtful but nevertheless pleasant smile before continuing-}* And who might you be?

Forrest Gump: Forrest Gump, sir.

{Charles thinks to himself, "Goodness gracious, his explanations are as stunted as he is". In a voice laden with exasperation and impatience, he replies -}

Charles Darwin: Mr. Gump, you were in the lecture theatre just a moment ago when Mr. Al Gore explained the dire straits our planet is supposedly in - mortal peril, he detailed in fact Mr. Gump! It is said that the human race is having a negative impact upon our planet that is immeasurable and irreversible! They say terrible things are happening -

Forest Gump: Yeah, like the polar bears.

{Charles had been building steam fuelled by Forrest's simplicity and is completely baffled when Forrest interjects with what appears to be a nonsense remark about polar bears. However, coming from the 1800s, Charles is extremely sceptical of global warming and is not at all up-to-date with current affairs}

Charles Darwin: What about polar bears?

Forest Gump: They is drownin' 'cause o global warmin'⁹. All the ice be meltin' 'cause its too hot an' all, an' then them poor polar bears are stuck swimmin' an' swimmin' an' swimmin' an' they ain't never findin' a place to rest. They is real good swimmers too but that don't matter no more. Them po' polar bears.

Charles Darwin: Well I'm sorry to say it Mr. Gump, but clearly the polar bear isn't fit to live.¹⁰

Forrest Gump: But polar bears are big an' strong!

Charles Darwin: Mr Gump, you need to look at the bigger picture: the fittest species will survive because

⁸ Charles Darwin was born in Shrewsbury of England on February 12, 1809 (Stewart, 2005: p.5).

⁹ Polar bears are depicted drowning in Al Gore's *An Inconvenient Truth* 2006. Global warming could lead to the extinction of polar bears by the end of the century due to the rapidity of melting and eroding sea ice (Eilperin, 2004: p.13). There are currently approximately 22,000 to 25,000 polar bears in the world and their species is being hit by a "double whammy" of both global warming and harmful toxic chemicals (Cone, 2006).

¹⁰ Charles Darwin described an evolutionary process known as 'survival of the fittest' which argues that weaker species die out and species which are able to adapt to their environment survive and flourish. 'Life is an endless struggle for existence' (Stewart, 2005: p.71). Under this reasoning, if polar bears were to become extinct, it is owing to their inability to adapt accordingly to their environment.

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they are able to live most effectively upon the planet, that is, they adapt most accordingly to their surrounding environment. Species adapt and *evolve* with the changes of the earth. It's what I like to call *natural selection*. {Charles smiles smugly across the table at Forrest}.

Forrest Gump: But Mister Charlie {Charles makes a small sound of indignation at being addressed in this manner} global warming *ain't* natural!¹¹ An' that means it ain't hardly fair on all em' animals dyin' on account o' the world bein' too hot when it's us that done gone an' made it like that in the first place!¹² So I done reckon we got to be more altruistic in our approach like. I think that's what they calls it anyway. My mama always said to treat others kindly. An' it seems to me that's the only way things ever get better.¹³

Charles Darwin: Altruistic behaviour?¹⁴ {Disbelievingly} ...You think altruism¹⁵ is the answer to the world's problems? {Literally scoffs again} Mr. Gump, just because species are dying as a result of human activity, that doesn't mean it's not a natural occurrence. Humans are a superior species, so it is natural that our species should flourish while others merely die out. Only the fit¹⁶ survive Mr. Gump. That's no reason to frolick about trying to alter the course of nature and assist unworthy species that the world is better off without anyway. The fit survive because they are meant to survive and they are meant to survive because they are fit. Altruism is weakness at best - we don't need to help others. We ought to only concern ourselves with ourselves if we are to survive. No

¹¹ There is now a scientific consensus that global warming is human-induced according to Shah (2008).

Commonwealth Scientific and Industrial Research Organisation (CSIRO) Marine and Atmospheric Research Scientist, Dr. Penny Whetton states it highly likely that most of the rise in global average temperatures since the mid-20th century were due to increased greenhouse gas concentrations in the atmosphere and that there is a greater than 90 per cent chance that temperatures are rising due to human activities (CSIRO, 2007).

¹² Arguably, human activities are responsible for the mass extinction of species at a rate never before experienced: currently, several species become extinct each day while it is believed only a few species per thousand years became extinct in pre-human times (Beder 2006: p. 24).

¹³ Anthropological studies show a need for wider harmony appears to be universal, as "people have a right to be helped, but also a duty to help others in turn, which, collectively, acts as a stabilising mechanism for social order" (Plummer & Fennel 2007, p. 948).

¹⁴ Charles ought to consider altruism because an organism is said to behave altruistically (in evolutionary biology) when its behaviour benefits other organisms, at a cost to itself. The costs and benefits are measured in terms of reproductive fitness, or expected number of offspring (Stanford Encyclopaedia of Philosophy, 2003).

¹⁵ Altruism Australia (2008) defines altruism as "the principle of living and acting to help others".

¹⁶ The term 'fit' does not connote a healthy and strong individual creature but rather it implies that the species in question is suited to their environment.

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forget this altruistic nonsense, social Darwinism¹⁷ is the way forward!

Forrest Gump: I don't like that Mr. Charlie. With all due respect sir, I think we gotta do something' to hep them poor polar bears. I reckon if peoples had o' been more altruistic in the first place, the polar bears wouldn't be so bad off as they is now.

{Charles takes a deep breath in a minimalist attempt to keep his cool in conversing with Forrest}.

Charles Darwin: Mr Gump, would you just forget the polar bears? Please! They're not relevant.

Forrest Gump: "Dependin on wether you get your news from the *Stars an' Stripes* or by jus lookin' 'round at what the hell is goin' on"¹⁸. *{Forrest is breathing deeply. He wants to be polite but he is starting to feel like Charles isn't giving him the respect he is due}*. Mister Charlie, we is havin' oursevs a environmental **crisis**. They is all sorts of shit fixin to hoppen"¹⁹. It's not just the polar bears. Each year as many as 50,000 different species disappear.²⁰

Charles Darwin: Well that just means the process of natural selection is becoming more efficient!

Forrest Gump: *{solemnly}* I wish I could agree with you Mister Charlie but since we ain't gainin' any new creatures²¹ it seems to me we is only losin'. Extinction ain't occurring because species can't adapt to their **natural** environment, extinction is occurring' 'cause theys can't adapt to their **unnatural** environment²². "That much I figgered out on my own"²³. But I also learned that since we're all doin' so much damage to the environment, we done gone building' write on top o' animals homes

¹⁷ Social Darwinism refers to the development of evolutionary theory in describing and explaining the development of human societies (Love, 1982: p.41). It is an elitist view arguing that the fittest should survive and flourish in society while the inept and unfit should be permitted to die out (ThinkQuest, 2000). In its most extreme sense, the term connotes ideas similar to that of eugenics (College of DuPage, 2000); however, perhaps more commonly, the term is 'especially associated with use of ideas of struggle for existence and survival of the fittest to prove that the individualistic, competitive society' (Love, 1982: p.41) of 'cowboy economies' (Beder, 2006: p.12) is the 'natural road to progress' (Love, 1982: p.41). In this sense, Charles has united social Darwinism with consumption and production at the expense of environmental degradation. He is not convinced by the dramatic warnings of global warming and is determined that society ought to continue its current level of growth, completely dismissing the issue of sustainability.

¹⁸ Direct quote taken from Groom (1986: p.58).

¹⁹ Direct quote taken from Groom (1986: p.23).

²⁰ Scientists estimate there are 10 to 30 million plant and animal species on the planet, most of them unidentified, many (approximately 50,000 per year) rapidly disappearing and many as a result of human activity (Olson, 2005).

²¹ New plant and animal species are emerging, but at a very slow rate - it's a 1 million to 4 million year process but humans are causing species to be lost at rates of 100 to 1000 times faster (Olson, 2005).

²² "Extinction has been caused by the removal of forests and bushland for agriculture, forestry and urban development; competition from introduced and cultivated plants and animals; and pollution of changes to waterways" (Beder, 2006: p.24).

²³ Direct quote taken from Groom (1986: p.14.).

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an' forcin' them to change so much that they lifestyle is threatened and their ability to... evolve - I think you said - well that's threatened too, them scientist don't even know if all the animals can survive through adaptation anymore²⁴.

Charles Darwin: *{spluttering}* Unable to evolve... not able to survive through adaptation!? Why, that's preposterous! You don't know what you're talking about! Your're none other than a common idiot!

{Charles' eyes are wide in a look of mingled confusion and anger. Calming, he begins to massage his temples. Forrest, highly affronted, replies with bitter hostility ringing in his voice}

Forrest Gump: "Maybe I am a idiot, but at least I ain't *stupid*."²⁵

{Charles looks up from the table and across at Forrest. He takes a steadying breath and calmly continues}

Charles Darwin: Mr Gump. I am sorry I insulted you, it was very... ungentlemanly of me. But we're taking part in a *world* convention. I can't have you running away with crackpot ideas in your mind about preserving biodiversity²⁶ instead of progressing forward²⁷. Despite the fact that I am not from modern times, Mr Gump, I happen to know that 'sustainable development'²⁸ was accepted as viable by the United Nations General Assembly *and* the governments of 100 different nations back in 1987²⁹.

{Charles folded his arms on his chest and settled back in his chair, as if he had just settled the matter.

Forrest stared back at him blankly for a moment}

Forrest Gump: ...um... well... they say that ever since the first pictures of the planet were sent back from

²⁴ "...Environmentalists argue that the destruction and modification of habitats that result from economic activity is threatening the ability of life forms to evolve and therefore to survive through adaptation" (Beder 2006: p. 24). With global warming on the increase and species and their habitats on the decrease, chances for ecosystems to adapt naturally are diminishing (Shah 2008).

²⁵ Direct quote taken from Groom (1986: p.33).

²⁶ Preserving biodiversity is Forrest's main concern - as an altruistic being - even if he has not been able to express it so eloquently. "When people talk of preserving biodiversity they generally mean that a full and diverse range of plant and animal species should be maintained" (Beder, 2006: p.24). Preserving biodiversity is at the epicentre of all Forrest's arguments.

²⁷ Social Darwinists advocate economic competition as naturally necessary in for society's fittest to survive and thrive. Under systems of capitalism, this results in consumption of valuable limited resources as way of achieving economic goals that are portrayed to be of primary importance.

²⁸ Sustainable development refers to "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, cited in Beder, 2006: p.18.)

²⁹ The goal of sustainable development was agreed on in October 1987 (Beder, 2006: p.18).

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outa space, theys not so sure we can live like we do anymo'.³⁰ An' I ought to know – havin; been outa space an' all. I can tell you, it were bad all over³¹; the Earth don't look so hot. Which is ironic, 'cause that's exactly what it is, on account o' global warming! Hee hee. Anyways, it is stamped permanent into my memory because my, my, it were repulsive! When I be piccherin that an' when I think 'bout what it means, it done scare me haf to death! They aint no question in my mind that we are up the creek for sure! Yessiree.³²

Charles Darwin: *{disbelievingly} You went to outer space?? I'd never have dreamed it! People in places other than our planet... And they sent you of all people? Ha! That's incredible. {Charles is quiet a moment, clearly in deep thought. He is beginning to see Forrest in a new light and can almost see why Forrest might be of some use in influencing the world at large, even if only as an exaggerated measure of the masses and yet perhaps Forrest does have something more to offer. However, Charles remains sceptical of the arguments Forrest has thus far put forward and is keen to get to the bottom of it. Hence he continues - }* If a resource were to run out, we would adapt and evolve accordingly, as would society, people would find another way of meeting their needs. You see, 'necessity is the mother of invention'³³ just as life is an endless struggle for existence.

Forrest Gump: If you saw what I saw, you'd say we only have maybe a hundrit years lef.³⁴ I reckon that if we don't face a limit to growth now then we done gonna face a limit to our *existence* then.³⁵

Charles Darwin: But humans, as the fittest creatures on the face of the Earth, could simply outsmart limits to growth and/or limits to resources through technological change as a form of adaptation; we could surely develop other alternatives!³⁶ Social Darwinism will just manufacture the operation of society and more specifically, the use of resources in a more efficient manner.

³⁰ The first published pictures of Earth greatly undermined the idea of the planet having an unlimited capacity to provide for its inhabitants (Beder, 2006: p.12).

³¹ There is evidence of major environmental degradation in every part of the world (Beder, 2006: p.25).

³² Expressions paraphrased from Groom, 1986.

³³ Technology has the potential to change the amount and type of resources currently required to produce a reasonable standard of living (Beder 2006: pp.22-23).

³⁴ "If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years" Meadows, et al. cited in Beder (2006: p.13).

³⁵ Resources simply cannot continue to grow exponentially, regardless of how clever technology may become. (Ekins, cited in Beder 2006: p. 15).

³⁶ This line of argument is often employed by economists who wish to deny limits to growth and maintain that economic expansion is still sustainable (Beder, 2006: p.14) despite vast expanses of evidence which indicate that we are currently coming ever closer to the crisis of overshoot.

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Forrest Gump: But if technology makes resource use more efficient, wouldn't more people wanna use it?

It could end up makin' things even worse for all the polar bears!³⁷

{Charles opens his mouth as if to speak, but closes it again.}

Forrest Gump: It is not so much the depletion o' resources such as oil an' minerals an' such that worries me - even if that ain't what they say is sustainable - I am mosely concerned with environmental degredation: Species extinction an' all that³⁸. Like I was sayin' 'bout them poor, poor polar bears 'fore. I reckon we got to do something' to hep them. 'Cause they polar bears. An' I done reckon we gotta hep all the creatures we can. You gotta do ever thing you can to hep cause like I said, seems to me that's the only way things are ever gonna get any better.

{But Charles is not listening. He begins to speak again, though more to himself than to Forrest.}

Charles Darwin: Even if we keep evolving, keep *adapting*... is it really adapting? Can you call it that if we're thriving over all species but the planet isn't?... is that really evolution in the social sense? In the wholistic sense?... evolving, adapting... We're still after the same economic prosperity... social Darwinism will have us battling the same battle of individual competition... the fittest survive... but they're of the mind to continue in the fashion that helped them survive in the first place... that results in the social evolutionary cycle which is positive, but under capitalism, it simultaneously depletes the actual *planet*³⁹... a planet can't evolve... a planet can't adapt... we thrive... the planet doesn't... 'what good is thriving on a planet that is doomed?'⁴⁰... what answers does social Darwinism give us then?... we thrive... the planet doesn't... then what? *{He looks up at Forrest with a look of pure alarm etched upon his face}* THEN WHAT!?

{Forrest shrugs his shoulders almost nonchalantly}

Forrest Gump: We all be sinkin' in the same boat as them po' polar bears I guess.

{Three short musical notes sound and Nancy Drew can be seen walking briskly again, instructing people to change partners. There is a great scraping of chairs as everybody heeds her directions, but Charles' hands are clamped tightly to his small cubicle table, his knuckles white with the pressure and he alone, seems unable to move. His epiphany - inspired by simple-minded Forrest - has gripped him tighter than his hands have the table. He stands slowly and moves forward wondering what he could possibly contribute to the

³⁷ Technological changes which enhance productivity often lead to an increase in the exploitation of natural resources because although some technologies exist to reduce our ecological footprint, most are adopted to access the limited resources faster and easier (Beder, 2006: pp.23-27).

³⁸ Exceeding human carrying capacity results in the loss of biological diversity (Beder: 2006: p.23).

³⁹ "Our dominant culture continues to celebrate expansion in spite of its heavy toll on people and nature, we desperately try to ignore that much of today's income stems from liquidating our social and natural assests. We fool ourselves into believing that we can disregard ecological limits indefinitely" (Chambers, et. Al cited in Beder 2006:p.23).

⁴⁰ Toole, Grant William, aged 23, Warehouse Supervisor, 12/5/2008.

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next conversation.}

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REFERENCE LIST:

- AlGore 2008, accessed 12/5/2008: <http://www.algore.com/>
- Altruism Australia 2008, accessed 7/4/2008. <http://www.altruism.org.au/>
- An Inconvenient Truth* 2006, film, Paramount Classics and Participant Productions.
- Beder, Sharon 2006, *'Environmental Principles and Policies: An Interdisciplinary Approach'*, UNSW Press, Sydney.
- College of DuPage 2000, *'Social Darwinism'*, accessed 24/5/2008:
<http://www.cod.edu/people/faculty/fancher/SocDarw.htm>
- Cone, Marla 2006, 'On Thin Ice', *Mother Jones*, March/April Issue, accessed: 20/5/2008:
http://www.motherjones.com/news/feature/2006/03/on_thin_ice.html
- CSIRO 2007, *'Stronger Evidence for Human-Induced Climate Change'*, accessed 12/5/2008:
<http://www.csiro.au/news/ps2q9.html>
- Eilperin, Juliet 2004, 'Study says Polar Bears Could Face Extinction: Warming Shrinks Sea Ice Mammals Depend On', *The Washington Post*, November 9, p.13.
- Groom, Winston 1986, *'Forrest Gump'*, Black Swan Books, London.
- Love, Rosaleen 1982, *'Nature and Human Nature: Darwin and social Darwinism'*, Deakin University Press, Burwood.
- Olson, Dan 2005, *'Species Extinction Rate Speeding Up'*, accessed 14/5/2008:
http://news.minnesota.publicradio.org/features/2005/01/31_olsond_biodiversity/
- Plummer, R. & Fennell, D. 2007, 'Exploring co-management theory: Prospects for socio-biology and reciprocal altruism', *Journal of Environmental Management*, No. 85, pp. 944-955. Accessed: University of Wollongong Library, 29/04/2008.
- Shah, Anup 2008, accessed 14/5/2008: <http://www.globalissues.org/EnvIssues/GlobalWarming.asp>
- Stanford Encyclopaedia of Philosophy 2003, *'Biological Altruism'*, accessed 12/5/2008:
<http://plato.stanford.edu/entries/altruism-biological/>
- Stewart, Robin 2005, *'Charles Darwin's Big Idea: The Revolutionary Theory of Evolution'*, Hyland House Publishing, Flemington.
- ThinkQuest 2000, *Social Darwinism*, accessed 24/5/2008: <http://library.thinkquest.org/C004367/eh4.shtml>
- Toole, Grant William, aged 23, Warehouse Supervisor, 12/5/2008.
- Union of Concerned Scientists: Citizens and Scientist for Environmental Solutions* 2008, accessed 14/5/2008: <http://www.ucsusa.org/>
- Yong, Raymond N., Mulligan, Catherine N. & Fukue, Masaharu 2007, *'Geoenvironmental Sustainability'*, Taylor & Francis Group, Boca Raton.