Weather™ Incorporated: Environmental Education, Postmodern Identities, and Technocultural Constructions of Nature

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Abstract

In this essay I examine some of the ways in which nature is textualized in technocultural discourses, with particular reference to the incorporation of satellite-based weather monitoring and digital imaging technologies into global consumer markets of information and entertainment. I argue that these discourses not only construct and mediate our day-to-day experience of weather, but also help to produce our identities as actors in the world by regulating the social and cultural practices through which we interact with nature. I suggest that critical readings of popular media representations of weather, such as those I provide here, are a necessary part of an approach to environmental education that recognizes and problematizes our participation in the cultural narratives and processes that produce our understandings of "nature" and "culture" and mediate their interactions.

Résumé

Dans cet essai, l'auteur étudie quelques–unes des façons dont la nature est prise en compte dans les discours technoculturels, en se référant plus spécifiquement à l'introduction du monitoring de la météo par satellite et des technologies de l'imagerie digitale dans les marchés globaux de consommation de l'information et du loisir. L'auteur soutient que non seulement ces discours construisent et influencent notre expérience quotidienne du temps qu'il fait, mais qu'ils contribuent également à développer nos identités en tant qu'acteurs du monde en régulant les pratiques sociales et culturelles à travers lesquelles nous interagissons avec la nature. L'auteur

suggère de considérer la lecture critique des représentations du temps (conditions climatiques) véhiculées par les médias populaires, comme celles qui sont fournies dans cet article, comme une composante essentielle d'une éducation relative à l'environnement qui reconnaît et questionne notre participation dans les processus et les discours culturels qui produisent nos compréhensions de la "nature" et de la "culture" et influencent leurs interactions.

Strange Weather

All over the world
Strangers
Talk only about the weather
(Tom Waits & Kathleen Brennan, "Strange weather," 1967)

. . . aside from general elections, weather forecasting is the only time most of us see a national map
(Andrew Ross, *Strange Weather*, 1991, p. 242)

As an academic educator with unabashed ecopolitical commitments (see, for example, Gough, 1989, 1994) the standpoint from which I appraise many texts—including song lyrics and weather forecasts—might best be described as *ecocritical*. In a recent essay exploring a number of principles of ecocriticism, William Howarth (1996) describes an ecocritic as "a person who judges the merits and faults of writings that depict the effects of culture upon nature, with a view toward celebrating nature, berating its despoilers, and reversing their harm through political action." While I share many of Howarth's own reservations about the adequacy of this definition, it nevertheless serves my purpose here, which is to subject some contemporary popular discourses of weather broadcasting to ecocritical scrutiny. I do this from a poststructuralist perspective which recognizes that the discursive networks to which we have access in our everyday lives are significant in producing our identities as actors in the world and regulating the social and cultural practices through which we interact with nature.

I chose the quotations which open this essay not only because they come from different works with the same title (although I certainly hoped this would pique readers' curiosity) but more particularly because, despite their brevity, they gesture eloquently towards the many different ways in which weather is implicated in the everyday transactions through which we produce meanings of self, others, and nature. Between them, these two quotations point to four common sites of weather discourse: conversational ice-breaking, popular song, mass media weather forecasts, and academic texts. Weather may frequently be an explicit component of commonplace cultural narratives such as these—exemplified here by the way it works in exchanges of meaning between strangers as a kind of "safe text" [1] —and also, as Ross's generalization suggests, it may implicitly frame others. That is, weather maps are daily reminders of the physical shape and dimensions of whichever nation-state we are inhabiting at the time, within which we tacitly register our own specific geopolitical location and national identity. For example, US weather maps typically show state boundaries and significant topographical features—such as mountain ranges, major lakes and rivers—but Canada and Central America are shown as graphically empty, if depicted at all; Canadian weather mappers are more generous in acknowledging that the North American continent and its weather systems are shared by a number of other countries.

I also chose these opening quotations because I believe that they respectively mark rather different eras in Western weather-consciousness. In the late 1960s, when Waits and Brennan wrote their song, it was not unusual for weather to be produced in intimate conversation—including the temporary, tentative, and quite possibly illusory intimacy in which strangers, "all over the world… talk only about the weather." In the then dominant traditions of popular song, weather was often deployed (via metaphor and other figures of speech) to naturalize personal feelings and emotions such as the radiant affection expressed by such standards as "You are my sunshine," or the more tentative dawning of warmth and enlightenment in George Harrison's "Here comes the sun;" weather and its effects also provide key images in representing the euphoria of Gene Kelly "Singing in the rain," the melancholy of Buddy Holly lamenting that it was "Raining in [his]

heart," the desperation of Elvis Presley searching in the cold "Kentucky rain," and the regret of Jimi Hendrix listening as "The wind cries Mary." Such constructions of weather are still with us, but they now compete with weather produced on a much grander scale using satellite-based optical technologies, digital data processing, and computer graphics. As Jody Berland (1996) points out, the images broadcast by MeteoMedia (the Montreal-based, cross-Canadian, cable weather station), position us not as intimates of the earth but as "post-panoptic" observers—we look down on the earth's simulation rather than up at the "real" sky.[2] Songs that evoke highly personal, individualized, and localized weather sensitivity may be too esoteric and technoculturally unsophisticated for the national and transnational consumer of weather channels and websites—representations of weather that much more obviously naturalize our social rather than our personal lives. Indeed, one of the station identification slogans on the US Weather Channel (a 24-hour cable service broadcast since 1982) asserts: "You need us for everything you do." Like the corporation that controls Detroit in the movie *Robocop 2* (Kershner, 1990)—Omni Consumer Products: "the only choice"—the Weather Channel constructs images of omnipresent weather effects which justify the production of new forms of advanced weather-consciousness, such as the weather-information needs that are assumed to be generated by an increasingly mobile general population.

But, apart from frequent fliers, who *are* the consumers who "need" a 24-hour televisual weather service for "everything" they do? Ross (1991) infers the identity of the Weather Channel's prime audience from an analysis of its program and advertising content and from the "almost inexhaustible" series of maps with which it positions its audience as weather citizens:

> fishing maps, business travel maps, picnic maps, indoor [and outdoor] relative humidity maps,…tanning maps, allergy maps,… the ominously named "aches and pains index," influenza maps, precipitation maps, radar maps, storm history maps, windy travel maps, . . . each charting in detail the geographical distribution of daily weather effects on our bodies, and each sponsored in turn by the manufacturer of an appropriate product. (p. 242)

But Ross (1991) also notes that:

> among the many Weather Channel maps, there are no maps of acid rain damage, deforestation, oil spill concentrations, toxic dump locations, or downwind nuclear zones. In the absence of these politically complex health and safety hazards, the responsible weather citizen's rights are only threatened with natural and not social erosion. So too, the channel's multiple address to individual, (his) family, and nation is pluralist in principle but speaks primarily to the citizen identity of a white male property-owner. Ideal Weather Channel "citizens" are assumed to be comfortably off, white-collar, with cars, boats, vacation options, families, and gardens and homes that require extensive upkeep. (p. 241)

This analysis makes it particularly clear that, while the popularity of cable weather services is often attributed to increasing public interest in environmental issues, it actually presents a very partial and distorted response to people's curiosity about such issues in the guise of a comprehensive one.[3] However, the Weather Channel is not alone in this regard. The syndicated global weather/environment feature, "Earthweek: Diary of a Planet," which regularly runs in such daily newspapers as the *Toronto Star*, the *Vancouver Sun*, the *San Francisco Chronicle,* and Melbourne's *The Age,* is a similarly partial and distorted selection from what it appears to be sampling, albeit on a much smaller scale than the Weather Channel (a little less than half a page of tabloid newsprint per week compared to round-the-clock broadcasting).[4] For example, "Earthweek" for the week ending September 6, 1996 (as printed in the Education supplement of *The Age*, Melbourne, September 10, 1996), as usual provides a schematic map of the world with symbols indicating the (very) approximate location of the events that this particular "Diary of a Planet" records. These include the highest and lowest temperatures recorded on earth during the week (48°C in Kuwait City and -67°C at the South Pole respectively), together with symbols which explanatory notes reveal to be sites of extreme weather conditions, natural disasters, severe environmental management problems, and what might best be called nature study trivia (with an emphasis on the bizarre); the headlines for the one- or two-paragraph explanations of these symbols are as follows:

- Thousands flee hurricane[5]

- Three quakes rock Algeria
- Wildfire claims buffaloes
- Poachers slay elephants
- Sydney storm
- Suicide walrus mystery
- Psychic pets revelation.

Other events that are typically recorded in "Earthweek" include floods, volcanoes, and launchings/landings of space exploration vehicles (the number of items devoted to space exploration and/or bizarre nature trivia tends to be inversely proportional to the availability of news of extreme weather, natural disasters, and other severe environmental problems). While most newspapers publish this feature in weekend editions—often quite literally positioned between the news and weather sections—Melbourne's *The Age* relocated "Earthweek" at the beginning of 1995 from its Saturday edition to its weekly Education supplement. This move reinforces my impression that "Earthweek" represents a convergence of environmental journalism with the exploitation of natural disasters and catastrophic weather as relatively juvenile forms of entertainment, most recently epitomized by the movie *Twister* (De Bont, 1996) and the *Time* magazine cover story of May 20, 1996 that coincided with the film's release in North America. The "Earthweek" headline, "Suicide Walrus Mystery," and the *Time* cover story's title, "On the Trail of Twisters: What Scientists Are Learning About the Mysteries of Tornadoes," also exemplify the tendency in much science and environmental journalism—especially when directed towards children—to position nature as "mysterious" (with "secrets" to be "discovered"). This can be read as an implicit trivialization of the issues on which such journalism is focused.

"Earthweek" and *Twister* can also be understood as products of a weather merchandizing industry that helps to sustain a global consumer market for the continuous, satellite-based weather forecasts that constitute the core program content of televisual services like MeteoMedia and the Weather Channel. But, as Berland (1996) argues, while the scope and expense of satellite surveillance services far outweigh their usefulness in routine weather forecasting, the popularity of weather broadcasting helps to legitimate and subsidize huge expenditures on space and

communications technologies with mainly military origins and purposes that would otherwise have to be funded entirely by government and defence industries. The socially beneficial applications of weather forecasts may appear to be obvious in countries like Canada and the USA, where hurricanes, snow storms, and other extreme weather conditions may affect everyday life and commerce. But in highly urbanized countries like Australia, where the vast majority of the population is concentrated in regions that are largely unaffected by catastrophic weather effects, there are very few significant practical benefits that warrant our apparent compulsion to consume the products and by-products of increasingly sophisticated weather forecasting technologies. Nevertheless, popular representations of weather clearly function in ways that regulate and naturalize our day-to-day lives, as I will now demonstrate by examining in some detail two recent Australian newspaper reports dealing with the subject of weather forecasting.

Four Seasons in One Day

> Even when you're feeling warm
> The temperature could drop away
> Like four seasons in one day . . .
>
> It doesn't pay to make predictions . . .
>
> (Neil Finn & Tim Finn, 1991a) [6]

On Tuesday, July 16, 1996, *The Age* reported technological advances in "numerically modeling the earth's atmosphere" that would take weather forecasting "from the lap of the gods to the laptop":

> **Bright Outlook on the Future of Forecasting**
>
> The unpredictable may soon be predictable. Come rain or shine Melbourne's legendary four seasons in one day will be forecastable seven days ahead with twice the present level of accuracy thanks to the world's most sophisticated weather technology developed in Australia.
>
> Requiring no more than a personal computer to run, the forecasting system is up to 10 times faster than existing methods.
>
> The Bureau of Meteorology in Melbourne . . . can now resolve weather details down to grid areas that are 75 kilometres by 75

> kilometres across; the best system in the United States, being used for the Atlanta Olympics, is detailed to 2.2 kilometres. The new Australian system resolves detail down to 500 metres and further development will sharpen this to 100 metres in time for the 2000 Sydney Olympics. (Spinks, p. A2)

Even within this brief excerpt we can discern several ways in which contemporary weather forecasting technologies exemplify the "postmodern condition," as characterized by a number of cultural theorists. For example, as mathematical modeling of the earth's atmosphere becomes more sophisticated, we increasingly seem to be responding to what Jean Baudrillard (1983) might call *simulations* of weather rather than to weather itself. Furthermore, our desire for continued acceleration of these simulations (the new forecasting system "is up to 10 times faster than existing methods") exemplifies Paul Virilio's (1986) concept of "speed fetishism." More significantly, perhaps, the above article's emphasis on the desirability of increasing the resolution of detail in atmospheric observations also marks weather forecasting as a technology of subjectification in Michel Foucault's (1975/1977) terms. Foucault argues that postmodern societies are characterized by increasing levels of self-imposed discipline, scrutiny and surveillance and, moreover, that we actively deploy our material and intellectual resources in pursuit of their achievement. The popularity of mobile telephones is currently one of the more obvious examples of this tendency, but weather forecasting also deploys disciplinary power/knowledge (Spinks' article elsewhere stresses the complexity of the mathematics on which the new system is based) to refine ever more effective technologies of scrutiny, surveillance, and normalizing judgment. While the object that ostensibly draws the weather forecaster's gaze is the planetary "body," the references to the Atlanta and Sydney Olympic Games also suggest that, in Ross's (1991) words, "it is the weather-sensitive [human] body rather than the weather itself that is the visible object of all this new knowledge" (p. 243). This becomes even more apparent in another news item which appeared in *The Age* on Tuesday, September 17, 1996:

September Springs a Nine-Year High With 28 Degrees

> The hottest September day in nine years had everybody talking yesterday. Even experts at the Bureau of Meteorology were excited.
>
> A senior forecaster . . . said computer models forecasting 19 degrees and a cloudy day for Melbourne were proven wrong. Yesterday reached a sunny 28.1 degrees at 2.30pm. (Winkler, p. A7)

I admit that my decision to quote from this item was motivated in part by the sheer pleasure I take from the earth's unpredictability—from its resistance to the forecasters' disciplinary power/knowledge. But, this item also illustrates how the plethora of statistics that typically accompany weather stories create self- and socially-regulatory fields. Placed above this item's headline is a shaded box with a thermometer graphic symbol and, under the title "Mercury Rising," four dot points including:

- Yesterday was the hottest day ever in the first half of September (up to and including September 16).
- It was the hottest September day since the day after the 1987 [Australian Football League] grand final.

Ross's (1991) analysis of similar kinds of statistical presentation on the Weather Channel is pertinent here:

> Discourse that situates the current weather in relation to a history of weather statistics functions as a way of normalizing our physical life, regulating its mean or average behavior in relation to an archive of temperature records. Abnormalities like record highs or record lows are part of the regulatory field of differences that locate our current degree of deviation from a norm of environmental behavior for which we are then made to feel responsible in some way. Statistics about the mean, norm or average belie the fact that there is no such thing as "normal" weather, let alone a "normal" climate; these average figures play the role of normalization for us. (p. 243) [7]

Precisely how we are "made to feel responsible" for "normal" weather and climate becomes apparent in two further paragraphs of Winkler's (1996) report:

> Meanwhile Mr Chris Ryan from the bureau said the ultraviolet index would be an average reading of four today. Speaking after the launch of the first UV radiation forecasts, he said the ultraviolet

> level, on a scale of one to about 16, would be measured each day and included in forecasts.
>
> Occasional patches of ozone thinness would boost the reading by one or two points, but the biggest factors affecting it would be clouds and latitude, he said. (p. A7)

Thus, from September 17, 1996, Australian weather consumers have yet another statistic to add to those that already quantify their sense of responsible weather citizenship. Ozone thinness may be a relatively minor variable in determining the UV index, but it is nevertheless mentioned first, and we are reminded that its effect is to boost the reading. Our knowledge of our own contributions to ozone depletion adds another layer of weather responsibility and, whenever the UV index exceeds the "normal" range, a new level of concern. It is by no means certain that these concerns will be deployed in self formation and social interaction in ways that conform with the expectations of institutionalized authority. Individuals may take up this particular discourse of responsible weather citizenship in various ways, and to various degrees, determined at least in part by their sense of their own and other people's agency in relation to what they assume to be "natural."

It's Only Natural

> Ice will melt, water will boil
> You and I can shake off this mortal coil
> It's bigger than us
> You don't have to worry about it . . .
> It's only natural . . .
>
> (Neil Finn & Tim Finn, 1991b)

The changing ways in which weather is represented in popular media are symptomatic of changing and contested relationships between nature and culture. Like Donna Haraway (1989), "I am not interested in policing the boundaries between nature and culture—quite the opposite, I am edified by the traffic," (p. 307) but the unity and stability of the meanings we attribute to nature are crucial components of the everyday discourses which produce our ecopolitical identities and regulate our social and cultural practices.

In modern industrial societies, nature has often been defined as "other to culture." Shane Phelan (1993) observes that "the opposition to 'culture' provides the bedrock meaning of 'nature' in the West, but this opposition has become fraught with tension" (p. 44). A significant corollary of this definition is that the opposition to nature "provides the bedrock meaning" of the "cultivated" subject—that is, the educated person—in western society. The destabilization of this particular meaning of nature has been a favorite rhetorical strategy of many green cultural critics. For example, as Tony Fry and Anne-Marie Willis (1989) write:

> The cultivator, as artist or critic, like the scientist, has so often regarded nature as low, as threat, as transcended origin and therefore in need of conquest and domination. The cultivated subject is seen to be the mind grown above nature and in command of it, totally separate from the baseness of body.
>
> This discourse has self-evidently failed. Humanity has damaged its own ecosystem, its collective and interdependent body, through the alienation of self from a nature that is external, other. (p. 230-231)

This is conventional wisdom among many environmentalists (and environmental educators) but for Fry and Willis (1989) it seems to suggest that mainly negative consequences—such as the "alienation of self" from nature—follow from the construction of nature as "external, other." By way of contrast, Bill McKibben (1990), in a eulogy for what he calls "the end of nature," draws attention to the self-constitutive force of differentiating ourselves from nature's externality and otherness:

> When I say that we have ended nature, I don't mean, obviously, that natural processes have ceased—there is still sunshine and still wind, still growth, still decay . . . . *But we have ended the thing that has, at least in modern times, defined nature for us—its separation from human society* . . . . [emphasis in original]
>
> We have killed off nature—that world entirely independent of us which was here before we arrived and which encircled and supported our human society . . . . In the place of the old nature rears up a new "nature" of our making. It is like the old nature in that it makes its points through what we think of as natural processes

> (rain, wind, heat), but it offers none of the consolations—the retreat from the human world, the sense of permanence and even of eternity. (p. 60, 88)

Thus, McKibben regrets the loss of a particular *meaning* of nature—of the "comforting sense . . . of the permanence of our natural world," (p. 7) reassuringly impervious to human action and will—but he is not so much grieving the death of nature as mourning the loss of the ontological security blanket with which nature once enveloped us. McKibben is alerting us to the possibility that "killing off" nature as a foundational reality that exists outside of human agency is one more way of bringing the foundational self into question—by collapsing the boundary that once separated us from nature, we have made it more difficult to recognize and identify ourselves as autonomous, unitary, centered subjects.[8] It may still be possible, in Richard Rorty's (1989) terms, to say that a world is "out there" that is "not our creation," and that "most things in space and time are the effects of causes which do not include human mental states" (p. 5), but it is becoming increasingly difficult to identify "natural" phenomena in our everyday lives that do not bear the mark of human agency (a particularly obvious example being the well-publicized effects of greenhouse and ozone-depleting gases on the earth's atmosphere). I should make it clear that I do not share McKibben's regret but, rather, see the dissolution of the human-nature boundary in similarly positive terms to the dissolution of the human-machine boundary—as providing opportunities to create, in Haraway's (1991) words, "a cyborg world . . . in which people are not afraid of their joint kinship with animals and machines, not afraid of permanently partial identities and contradictory standpoints" (p. 154; see also Gough, 1995).

A further tension in the relations of nature and culture is provided by the tendency for culture itself to be "naturalized." For example, Fredric Jameson (1991) writes that:

> Postmodernism is what you have when the modernisation process is complete and nature is gone for good. It is a more fully human world than the older one, but one in which "culture" has become a veritable "second nature." (p. ix-x)

McKenzie Wark (1994a) goes a step further than Jameson by equating postmodernism with the qualitative changes in the social

relations of culture enabled by "third nature" (for which he has more recently adopted the term "virtual geography;" see Wark, 1994b; Gough, 1996):

> Second nature, which appears to us as the geography of cities and roads and harbours and wool stores is progressively overlayed with a third nature of information flows, creating an information landscape which almost entirely covers the old territories. (p. 120)

The destabilization of "nature" by virtual geography is especially apparent in the ways many of us now experience weather. While we may still attend to the ways in which we engage physically with the weather, we have also naturalized the technologies through which weather is presented to us as an abstraction: to interpret or forecast the weather we are more likely to look at a television screen than the sky. Our cultural activities—industrial pollution, urbanization, agribusiness—have quite literally "constructed" the greenhouse effect and eroded the ozone layer but our knowledge of these and the many other complexities of climate change is constructed by the global network of weather stations, satellites, supercomputers, meteorologists and broadcasters that produce the images, models, and simulations that are the material representations of that knowledge. In this sense, as Berland (1994) writes, "the weather can no longer be considered 'natural' . . . but (like gender and other previously 'natural' concepts) must be understood as [a] socially constructed artifact" (p. 106).

Weather With You: Implications for Environmental Education

> Everywhere you go
> You always take the weather with you
>
> (Neil Finn & Tim Finn, 1991c)

For those of us who dwell in highly urbanized and technologized societies, much of what now counts as "nature" consists of the measurement and projection of human culture's interactions with the biosphere in and on a virtual ecology of global information flows. Under these circumstances, I find it most helpful to think of environmental education as a struggle to come to pedagogic terms with the "narrative complexity" (Gough, 1993) generated by the

categorical ambiguities and entanglements that now attend such concepts as self, culture, nature, and artefact. To date, little of what is performed in the name of environmental education has engaged (or sought to engage) this struggle but, rather, tends to reflect and to naturalize models of social interaction in which "rational" behaviour is assumed to follow from human actors pursuing their more or less enlightened self-interests in maximizing utilities and amenities or satisfying preferences. Environmental education typically depicts the forms of knowledge it privileges (whether this be abstract science or experiential fieldwork) as being instrumental in enabling humans to pursue such "rational" choices but ignores the ways in which human agency is *produced* by, and within, the complex circuits and relays that connect—and contingently reinforce—knowledges and subjectivities in the technocultural milieu of postmodern societies. Yet the extent to which knowledges are authorized, and the manner in which they are (or are not) mobilized in the form of dispositions to act (or not), may be very sensitive to different cultural traditions, values, and identities. For example, Brian Wynne (1994) argues the need for caution in predicting the effects of providing people with scientific knowledge of global environmental change:

> The assumption is that increasing public awareness of global warming scientific scenarios will increase their readiness to make sacrifices to achieve remedial goals. Yet an equally plausible suggestion is that the more that people are convinced that global warming poses a global threat, the more paralysed they may become as the scenarios take on the mythic role of a new "end of the world" cultural narrative. Which way this turns out may depend on the tacit senses of agency which people have of themselves in society. The more global this context the less this may become. Thus the cultural and social models shaping and buried within our sciences, natural and social, need to be explicated and critically debated. (p. 186)

Comparable arguments can be mounted in relation to efforts by socially critical environmental educators to increase public awareness of, say, the extent to which scientific models of global warming reflect the interests of developed countries and obscure the political domination, economic exploitation, and social inequities underlying much global environmental change. Again, we cannot assume that such knowledges will mobilize people "to make

sacrifices to achieve remedial goals." To do so would be to ignore the possibility of what Wynne (1994) calls "the intrinsically alienating effects of knowledge which constructs people in environmental processes as if they are merely reproducing and extending consumer-based capitalism" (p. 187) (to which we could add imperialism, colonialism, and so on).

Such considerations lead me to suggest that in environmental education we need to attend much more closely to the micro-politics of subjective life, though not, I must emphasize, as a further exercise in the kind of scrutiny and surveillance that we already practice to excess in education and educational research. Rather, we need to participate more fully, self-critically, and reflexively in the cultural narratives and processes within which identity, agency, and knowledges are discursively produced. Put bluntly, environmental education should be less concerned with "nature" than its cultural invention. In terms of the specific aspect of nature-culture relations that I have addressed in this essay, we need to recognize that "our" weather is not only that which some of our senses might tell us is "real," but also the weather that is produced, simulated, and performed for our pleasure in various broadcast media. Questions about *whose* weather we take with us (everywhere we go), and for what purposes and with what effects, are by no means simple—but they are, I believe, well worth asking.

Notes

[1] At the risk of over-extending a metaphor, one could say that weather has long functioned like a condom in casual textual intercourse.

[2] Images of the earth photographed from space can be read in many ways. James Lovelock (1987) describes Gaia theory as a synthesis of "ancient belief and modern knowledge" inspired, in part, by "the awe with which astronauts with their own eyes and we by indirect vision have seen the Earth revealed in all its shining beauty against the deep darkness of space" (p. ix). These images also seem to have reinforced the appeal of the "spaceship earth" metaphor and other conceptions of global community, ecological interdependency, and biospheric fragility. Such readings appear to me to be at best romantic and at worst hubristic, arrogantly taking the benefits of a god's eye view for granted while ignoring the costs of obtaining it.

[3] Ross (1991) makes the rather strange assertion that the "success of the Weather Channel" lies at least partly in "expanding the definition of weather to include all of the ways, forms and contexts through which our body responds to and is constructed by discourse about the environment" (p. 242). This conclusion is patently indefensible in the light of his own analysis of the Weather Channel's occlusion of ecopolitical issues.

[4] "Earthweek's" website, <http://www.slip.net/~earthenv/>, has numerous links to sources of further information about the weather and environmental news it reports.

[5] Under this headline are brief details of the effects of the two hurricanes and two tropical storms that the world map shows as being in the vicinity of the USA; hurricane Orson, shown in the vicinity of Japan, is not mentioned.

[6] All of the songs by Neil and Tim Finn from which I quote here are performed by Crowded House on the album, *Woodface* (EMI/Capitol Records).

[7] In a review of *The Day Niagara Falls Ran Dry! Canadian Weather Facts and Trivia* (Phillips, 1996), Scott Mair (1996) exemplifies the tendency to use weather statistics "as a way of normalizing our physical life" when he describes one chapter, "Weather Across Canada," as "a coast-to-coast-to-coast look at how we compare with each other in the sunshine, rain, frost, fog, humidity and cloud categories." He further exaggerates this tendency by concluding that "St. John's may be Canada's weather champion—Canada's foggiest, snowiest, wettest, windiest and cloudiest place . . ." (p. 21).

[8] These (or similar) terms are often invoked in characterizing the so-called "crisis of the self" precipitated by new information technologies (see, for example, Barglow, 1994, pp. 64-5) and biotechnologies (see, for example, Haraway, 1991), but less attention seems to have been given to the possible significance of global environmental change in problematizing the boundaries of the postmodern subject.

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References

Barglow, R. (1994). *The crisis of the self in the age of information: Computers, dolphins, and dreams*. London and New York: Routledge.

Baudrillard, J. (1983). *Simulations* (Paul Foss, Paul Patton, Philip Beitchman, Trans.). New York: Semiotext(e).

Berland, J. (1996). Mapping space: Imaging technologies and the planetary body. In S. Aronowitz, B. Martinsons, M. Menser, & J. Rich (Eds.), *Technoscience and cyberculture* (pp. 123-137). New York and London: Routledge.

Berland, J. (1994). On reading "the weather." *Cultural Studies*, *8*(1), 99-114.

De Bont, J. (Director). (1996). *Twister* [Film]. Universal Pictures, Warner Bros., Amblin Entertainment.

Earthweek: Diary of a planet. (1996, September 10). *The Age*, p. 12.

Finn, N. & Finn, T. (1991a). *Four seasons in one day* [Song]. Melbourne: Mushroom Music.

Finn, N. & Finn, T. (1991b). *It's only natural* [Song]. Melbourne: Mushroom Music.

Finn, N. & Finn, T. (1991c). *Weather with you* [Song]. Melbourne: Mushroom Music.

Foucault, M. (1977). *Discipline and punish: The birth of the prison* (Alan Sheridan, Trans.). New York: Pantheon. (Original work published 1975)

Fry, T. & Willis, A. (1989). Criticism against the current. *Meanjin*, *48*(2), 223-240.

Gough, N. (1996). Virtual geography, video art and the global environment: Postmodernist possibilities for environmental education research. *Environmental Education Research*, *2*(3), 379-389.

Gough, N. (1995). Manifesting cyborgs in curriculum inquiry. *Melbourne Studies in Education*, *29*(1), 71-83.

Gough, N. (1994). Playing at catastrophe: Ecopolitical education after poststructuralism. *Educational Theory*, *44*(2), 189-210.

Gough, N. (1993). Environmental education, narrative complexity and postmodern science/fiction. *International Journal of Science Education*, *15*(5), 607-625.

Gough, N. (1989). From epistemology to ecopolitics: Renewing a paradigm for curriculum. *Journal of Curriculum Studies*, *21*(3), 225-242.

Haraway, D. J. (1989). Monkeys, aliens, and women: Love, science, and politics at the intersection of feminist theory and colonial discourse. *Women's Studies International Forum*, *12*(3), 295-312.

Haraway, D. J. (1991). *Simians, cyborgs, and women: The reinvention of nature*. New York: Routledge.

Howarth, W. (1996). Some principles of ecocriticism. In C. Glotfelty & H. Fromm (Eds.), *The ecocriticism reader: Landmarks in literary ecology* (pp. 69-91). Athens GA and London: The University of Georgia Press.

Jameson, F. (1991). *Postmodernism, or, the cultural logic of late capitalism*. London and New York: Verso.

Kershner, I. (Director). (1990). *Robocop 2* [Film]. Orion Pictures Corporation.

Lovelock, J. E. (1987). *Gaia: A new look at life on Earth*. Oxford and New York: Oxford University Press.

McKibben, B. (1990). *The end of nature*. London: Viking.

Mair, S. (1996). [Review of the book *The day Niagara Falls ran dry!*] *Interpscan: The national journal for interpretation Canada, 23*(3), 21.

Phelan, S. (1993). Intimate distance: The dislocation of nature in modernity. In J. Bennett & W. Chaloupka (Eds.), *In the nature of things: Language, politics, and the environment* (pp. 44-62). Minneapolis: University of Minnesota Press.

Phillips, D. (1996). *The day Niagara Falls ran dry! Canadian weather facts and trivia*. Toronto: Key Porter Books.

Rorty, R. (1989). *Contingency, irony, and solidarity*. Cambridge, MA: Cambridge University Press.

Ross, A. (1991). *Strange weather: Culture, science, and technology in the age of limits*. London and New York: Verso.

Spinks, P. (1996, July 16). Bright outlook on the future of forecasting. *The Age*, p. A2.

Virilio, P. (1986). *Speed and politics* (M. Polizotti, Trans.). New York: Semiotext(e).

Waits, T. & Brennan, K. (1967). *Strange weather* [Song]. New York: Jalma Music.

Wark, M. (1994a). Third nature. *Cultural Studies*, *8*(1), 115-132.

Wark, M. (1994b). *Virtual geography: Living with global media events*. (Vol. 8). Bloomington and Indianapolis: Indiana University Press.

Winkler, T. (1996, September 17). September springs a nine-year high with 28 degrees. *The Age*, p. A7.

Wynne, B. (1994). Scientific knowledge and the global environment. In M. Redclift & T. Benton (Eds.), *Social theory and the global environment* (pp. 169-189). London: Routledge.