

ACCESSING THE GLOCALITY OF CLIMATE CHANGE: A COGNITIVE FALLACY

SERGE NTAMACK

University of Cape Town, South Africa

Corresponding author: mackserge@hotmail.com

ABSTRACT

This essay addresses some methodological biases present in the mode of knowing the changing weather through scientific research. These biases are coined with the concept of glocality. The paper argues that as a device of the cognitive globalisation around environmental issues, glocality operates in science as a cognitive form of ubiquity deriving from an attempt to compress the spatiotemporal dimension of the changing weather within the time and space of the mind. In the case of climate change, it refers to three focal points summarised as problems of climate change's phenomena, problem of the ontologies of climate change's phenomena and problem of the logics of climate change's phenomena. The intersections between these three problems show how blurry are the frontiers between scientific knowledge and political power.

Key Words: Climate change, cognition, globalisation, international relations, knowledge

RÉSUMÉ

Cet essai traite de certains cas de méthodologie biaisée dans le mode de savoir sur le changement climatique à travers la recherche scientifique. Ces erreurs sont associées au concept de la glocalité. Cet article montre que comme instrument de la globalisation cognitive des problèmes environnementaux, la glocalité opère en science comme une forme cognitive de l'ubiquité dérivant d'une tentative de comprimer la dimension spatiotemporelle du changement climatique dans le temps et l'espace. Dans le cas du changement climatique, la glocalité se réfère à trois points focaux exprimant les problèmes liés au phénomène du changement climatique, les problèmes du phénomène ontologique du changement climatique et les systèmes logiques des phénomènes du changement climatique. Les intersections entre ces trois problèmes montrent comment les frontières entre la connaissance scientifique et le pouvoir politique ne sont pas claires.

Mots Clés: Changement climatique, cognition, globalisation, relations internationales, connaissance

INTRODUCTION

Climate change transcends boundaries and categories and erects itself as a cosmopolitan phenomenon (Hulme, 2010). Hargens (n.d.) notes that climate change is a *multiple object*, a *hybrid object* – a combination of scientific third-person observation and cultural second-person meanings – and an *integral object* i.e. “an ontologically distinct phenomenon that is a combination of first and second, and third person dimensions”. In this regard he argues that distinct and overlapping intrinsic features of climate

change are enacted by various individuals with their own “kosmic address” which highlights that an observer uses a method of observation to observe something. Jamison (2010) reports that there are three main positions in relation to climate change knowledge depicted as dominant, oppositional and emergent. The dominant position is assumed by those who have been more active in the last decade promoting the reduction of emission of carbon dioxide and the transition to a “low-carbon society”. The oppositional is associated with those who have been termed climate sceptics and question the

importance of dealing with climate as opposed to others issues. The emergent position is associated with those who acknowledge the happening of climate change and its serious consequences. However this group stresses at the same time the significance of dealing with climate change in a manner that issues of justice and fairness are seriously considered. Moreover Jamison suggests that the rise of the dominant voices in climate change knowledge has been facilitated by their connection with the neo-liberal and transnational capitalist movement. According to him many of the dominant voices in the field of climate change politics have been promoting the establishment of closer relationship between academic scientists, business firms, and in commercialising scientific knowledge. As a result the conception of science deriving from the vocal voices on climate change is non-disciplinary and entrepreneurial and makes the knowledge produced in climate research centres dependent on contexts both financial and organisational.

The country-specific's experiences of the weather are not limited to the tree positions depicted by Jamison (2010). In fact the "cognitive globalisation" of climate change through science homogenizes the differential experiences of the changing weather across the globe by constructing a common consciousness around environmental issues. The climate changes locally and their causes -if there is any attached to human activities -remain local while able to affect distinctively multiple localities. Yet what is considered or intend to be considered as solutions for climate change are more informed by local priorities rather than global or more precisely universal concerns. This paper argues that situation is enabled through the device of glocality. I define the glocality of climate change as a cognitive form of ubiquity deriving from an attempt to compress the spatiotemporal dimension of the changing weather within the time and space of the scientific mind. This form of ubiquity erects an apparent unity through a focus on a common object (climate change) and overshadows the significance of its differential manifestations by insisting rhetorically on some of its material aspects (for instance rising sea, desert encroachment, floods etc...); and by trivialising the fact that although depicting some

common patterns, climate change remains before all a local problem with distinctive features. Concretely the illusion created by that projection of the mind is sustained partly in the real world by the objects (i.e. climate change or ozone layer) of the "provisions linking developed-world distributive transfer with developing-world substantive environmental commitments while recognising Southern development imperatives" (Drumbl, 2002). This paper is a reflection on the methodological biases embedded in some scientific reasonings on the climate seen through the optic of glocality. In this regard the glocality of climate change entails three focal points that are addressed in the three respective sections of this essay concerned firstly the problems of climate change's phenomena, secondly the problem of the ontologies of climate change's phenomena and finally the problem of the logics of climate change's phenomena.

The problems of climate change phenomena.

The enunciation of the prime terms "climate change" recalls an imagery broader than the semiotic scope of the word "weather". According to the Oxford dictionary the weather is defined as "the condition of the atmosphere at a certain place and time, with reference to the presence or absence of sunshine, rain, wind etc. "In contrast climate refers to "the regular weather conditions of an area or an area with certain weather condition". Climate suggests a set of regular features of the atmosphere in a specific area while the weather is characterised by the contingency of the features of the atmosphere in a particular place. Therefore "climate change"³ is not the equivalent of "weather change"- in fact the weather always changes and it is exempt from any regularity in its manifestations. The idea of regularity of the climate originated from a synchronic snapshot of the repeating sequences of a diachronically changing weather captured by the scientific mind. But the climate does not change in the same way from one area to another and it is only from the locality that we can grasp accurately the significance of the changing weather primarily through the human body. As such the gap between climate change and the changing weather is not only the fact of the literal distinction between "climate" and "weather" but

also of an extent to which different modes of knowing can acknowledge the same phenomenon and provide explanations.

Climate change articulates its grammar across the logics of the fields which speak of itself. It evokes many things which find a principal connection in its literal meaning. Defining it would be authoritatively and instrumentally choosing among its meanings, the one suitable for the purpose of the present analysis. To avoid this temptation, I prefer to acknowledge instead the particular genealogy of climate change in regard to its corollaries global warming and greenhouse effect⁴. As a result climate change can be dated back to the work of the French scientist Jean Baptiste Joseph Fourier in the early part of the nineteenth century and later of John Tyndall, a scientist working at the Royal Institute in London. The works of those scientists have established a causal relation between human industry and climate change through the greenhouse effect (Giddens, 2009). In other words the greenhouse effect explicit the “scientific” foundations of the anthropogenic cause of climate change. From having been more or less ignored by policymakers between 1970s and 1980s regardless of the worrying evidence provided by the research community, climate change became considered as a serious matter thanks to the sophistication of climate modelling by the 1990s (Brown *et al.*, 2007). However it is important to notice that while this “scientific” explanation seems new, the impact of human beings on the climate has been acknowledged but explained differently elsewhere (non-western settings). In Cameroon for instance in relation to “natural” disasters and witchcraft, Geshiere (1995) notes that:

By definition, witchcraft is practiced in secret; it is therefore often very difficult to know who did what. Yet it is also a basic tenor to these discourses that they explain each and any event by referring to human agency. Thus, they tend to personalise the universe: all sorts of events, especially those that Westerners call “natural” disasters or chance, are seen as direct consequences of human acts- either individual initiatives or, more often, collective conspiracies fomented by shadow gangs.

It seems to me that the significance of the human induced-climate change is less about the

validity of the explanations provided to understand the human impact on the weather but about its cogency in relation to its practical implications in everyday life. In comparative studies inquiring into the public opinion on global warming in 48 countries (including among others, South Africa, Ghana, Egypt, Morocco, Burkina Faso, Ethiopia, Mali, Rwanda and Zambia), Kvaloy and Listhaug (2010) find that climate change is a political issue of potential importance across the globe. However they note that the perception of the problem is positively correlated with high education, post-materialism, and left-right self-identification (with strong concerns on the far left). Besides Giddens (2009) recapitulates three main positions linking the various views of the earth and the impact of human on it. First, according to him the sceptics are those who think that the earth is robust and the human impact upon it is deemed to be negligible. Second those closer to the mainstream, for whom the earth-at least the ecosystems- is fragile and has to be protected from the damaging intrusion we are making into it. Finally they are those who see the earth like “wild beast, ready and able to react violently and precipitously once it is sufficiently roused” (Giddens, 2009). In this regard climate change differs from a mere explanation about the way human beings impact on the earth not by being immune of the negatives consequences of the fantasy of “non-scientific” explanation but by being tied to the strategies of mitigation (i.e. how to get society to implement alternative approaches to economic growth that are less carbon intensive) and adaptation (i.e., solutions to help society to cope with the impacts of climate change). Consequently the various degrees of cogency which enjoy any explanation about the human impact on the weather reflect the features of the site (s) of cultural production of the area where their implications can be traced. Moreover, in order to find a solution to the indifference originating from the relativity of the cogency of the various explanations of the human impact on the weather (in this case the scientific one), Anthony Giddens suggests that the politics climate change has to cope with what he calls “Giddens’s paradox” meaning:

Since the dangers posed by global warming aren’t tangible, immediate or visible in the course

of day-to-day life, however awesome they appear, many will sit on their hands and do nothing of concrete nature about them. Yet waiting until they become visible and acute before being stirred to serious action will, by definition be too late.

Giddens's paradox is a paradox of a particular locality (an imagined geography of the West) inhabited by a particular group of creatures, having escaped temporally the incertitude of the nature through technology and lost the functionality of their bodies (embodied knowledge). Those creatures can understand the language of climate change but cannot experience the change in the climate yet; therefore they postpone the possibility to act accordingly until their body sensory systems (sight) witness that very change underground. In Giddens's paradox the intelligibility of the body is overshadowed by the predictive power of the mind. As such it is the outcome of a particular history of rationality. In this respect Semali and Kincheloe (1999) note:

Rationality emerged as the conceptual base around which civilisation and savagery could be delineated (Giroux, 1992; Alcoff, 1995; Keating, 1995). This rationalistic modernist whiteness is shaped and confirmed by its close association with science. As a scientific construct, whiteness privileges mind over body, intellectual over experiential ways of knowing, mental abstraction over passion, bodily sensations, and tactile understanding.

The creatures described in Giddens' paradox are not human beings. In case they were and even if I admit the possibility that technology acts as a wall distorting the communication between them and the earth via their body sensory systems; there is still no significant evidence why they do not take the risks of global warming seriously—especially if the assumption behind Giddens's paradox is that they (the majority of them at least) do understand the language of science (rationality) and trust its outcome. As such Giddens falls in the trap of intellectualism which treats perception as a matter of judgement (See Cerbone, 2006). It follows then that the scientific argument driving climate change just like the “non-scientific” explanations of the human impact on the earth enjoy a relative degree of cogency. The predictive power of science obviously enjoys more regularity than

witchcraft's predictions, but science is neither immune of risks and limitations. Schimank (1992) distinguishes two kinds of conditions leading to the production of societal risks of science-based technologies namely the general systemic dynamic of scientific risk production and the specific institutional conditions. Along the lines of the first conditions Shimank (1992) adds that:

Scientific truths are, at least in the natural and engineering sciences, almost always produced under a laboratory conditions which constitutes extreme simplifications of the conditions under which these truths are implemented in technologies (Bohme and van den Daele, 1977). This simplification is necessary to detect isolated causal relationships which would otherwise be hidden within the dense texture of “real-life” causalities. The “tight coupling” of the world has to be substituted by the “loose coupling” of the experiment. Thus scientific truths are strictly speaking, very artificial propositions which can only cover the reality outside the laboratory inaccurately.

In this respect “knowledge, or more accurately, knowledges (in the plural, to indicate the disappearance of a unified mental world) are both a personal and social force and resources containing unprecedented social and political consequences (McCarthy, 1996)”.

In the fourth report (2007) of the International Panel on Climate Change (IPCC), IPCC says that “warming of the climate system is equivocal” while the rest of the report is couched in terms in probabilities (Giddens, 2009). Those probabilities go hand in hand with the inaccuracy of the scientific answers on climate change (Revilla *et al.*, 2010). Sandvik has noted that the research agenda on climate change is a twofold project; on one side it plans to provide the scientific foundation of climate change, and on the other side it presupposes the integration of purely scientific argument with factors that influence attitude formation and decision making (Kvaloy and Listhaug, 2010). The strength of the argument driving climate change has as main pillar not its shaky scientific character but the authority of the IPCC which recognised its validity by moving from a focus on decreasing uncertainties in climate models to informing decisions that are increasingly based on what we know as basic

science (Revilla *et al.*, 2010) - this is not to say that there is not an inner scientific foundation of climate change but that that scientific foundation is still fragile.

The scientification of the global character of climate change through political recognition, blurs the lines between the outcomes of climate change *per se* and the inherent dynamic of the weather. The causes of climate change are local, the effects are global but the scientific measurements (or experiential ways of knowing) of those effects remain mostly local. Africa epitomise well this situation. It is portrayed as the region which will suffer the most from climate change, despite the fact that African countries are both absolutely and per capita terms an insignificant source of emissions of CO₂ globally while the developed countries remain the major emitters (Carius, 2009). That depiction of Africa as the victim or as merely incapable to deal with the effects of climate change is not scientifically valid. Few scientific researches delineating the effects of climate change from the inherent dynamic of weather has been conducted on the continent and few are likely to be conducted because of the financial constraints of African countries and the high cost of climate change modelling (Giorgi *et al.*, 2010:2). However portraying Africa as a “victim” (or more accurately “incapable”) can originate from a teleological reading of both climate change’s potential physical impact and Africa’s current technological (in) capacity to adapt to the effects of global warming. Therefore it is likely that this type of understanding of Africa does not escape the western foundations of the discourses about Africa studied by Mudimbe and paraphrases by Mbembe (2002) in the following words:

From this point of view, Africa as such exists only on the basis of the text that constructs it as the Other’s fiction. This text is then accorded a structuring power, to the point that a self that claims to speak with its own authentic voice always run the risk of being condemned to expressed itself in a pre-established discourse that mask its own, censures it, or forces it to imitate.

The problem of the ontologies of climate change phenomena. In the global governance the problem

of ontologies of climate change’s phenomena is illustrated by the permeability of two types of ontologies (universality I and universality II) through the device of power or authority. Robert Cox (2001) distinguishes two types of ontologies, “universality I” and “Universality II”. “Universality I” is an affirmation of the ultimate reality of the universe. It has its roots in monotheist religion and was taken over in secular form of enlightenment. In this ontology human being invent the idea of God as the all-powerful creator; from that they reverse the process of invention to assume the human mind to be the Godlike, which is to have the potential for understanding the truth of the universe. “Universality I” according to Cox is represented by the affirmation of the kind of truth embodied in religious revelations or certainties of enlightenment philosophy. It can also in a spurious form be applied to affirmations of the universality that are manifestly products of a particular historical situation but not recognised to be such for lack of critical self-appraisal. For example: neoliberalism. “Universality II” is the attempt to identify the basic constitutive factors that help toward understanding and acting upon a particular historical conjuncture. We could say the task is one perceiving the historical structures that characterise an epoch. These structures, which are mental constructions, summarise the cumulative result of human actions over time. The purpose of defining them is to construct a base point for considering the problems of maintenance or transformation of a particular order. Universality II is universal in transitory way, the snapshot of a world in a perpetual motion, the synchronic picture of something which is diachronically changing. I think that the recognition of global warming by IPCC legitimates the use of “universality I” on behalf of “universality II” as a way to tackle the threat represented by climate change for the current world order. While they are certain elements of responsibility in IPCC’s decision we cannot ignore its instrumental character. In this light IPCC has acted as an intelligent actor. For Dryzek and Berejikian (2000) in case actions constitute situations, then intelligent actors should reason constitutively as well as instrumentally, such that constitutive concerns should often overrides

instrumental ones. For these scholars “instrumental rationality is the capacity to devise, select and affect good means to clarified and consistent ends.” Conversely in constitutive reasoning, an actor does not ask the instrumental question, “Does action X help achieve goal Y?” Instead, the actor asks, “Does action X help to constitute a world I find attractive?”

In contrast Falk (1999) remind us that neither the nation-state nor the United Nations has the capacity to tackle the environmental problems in the current world, such a role should be played by the global civil society in what he calls “the globalisation from-below⁵”. But “global civil society” as a concept and social movement is problematic as Bob (2005) notes:

The term ‘global civil society’ is often used to counterpose a realm of principle and morality against one marked by self-seeking, profit, and power. Yet this view, reflecting one aspect of transnational relations, obscures as much as it illuminates. For academics, it furnishes few analytic tools for explaining why some challengers excite major support while others, equally if not more worthy, remains orphans. More broadly it misrepresents the underlying realities. The organisations and individuals composing networks are certainly motivated, in part, by high principles. But questions of organisational maintenance and survival also permeate NGO decision making.

Thus in order to grasp the “underlying realities” of climate change it is important to stay critical about the “cognitive globalisation” enhanced by global civil society in matter concerning a common consciousness around environmental issues. Interesting enough in Falk’s insight, it is his suggestion of a cooperative relationship between the market and the global civil society. In this regard the global civil society it is not that different from United Nation or the nation-state in his ability to use both instrumental and constitutive rationality while leaving the current world order unchanged. Furthermore its role suggests that we delineate what is global from what is universal and face the fact that the priority of locality (multiple localities if global) remains the shaping force of political action and activism. But under the cover of global civil society or a cause affiliated to it, Northern

countries can justify undue interventions in Southern ones. As such a term like “global civil society” eludes the historical relationships of domination still pervading North-South relations nowadays and homogenises some of the competing logics at work underground, this for the sake of mainstream politics (See, Slater, 2004). In contrast for Drumbl (2002: 854) in what he calls the “compact swap.

“North-South relationships are witnessing some changes in relation to environmental issues. For Drumbl “compact swap” means a “deal or arrangement to come together strategically to attain a particular goal”. In other words “it is one thing to say that A should (even, shall) provide X to B, it is quite another thing to say that, should A not effectively provide X to B, then B’s promises to A may no longer be binding”

The problem of the logics of climate change phenomena. Considering that world politics is populated by more or less intelligent actors, the problem of reflexivity of the logics addressing climate change’s phenomena is recurrent. Concerning the global governance of climate change Dryzek (2009) identify seven relevant discourses available in the public space namely ecological limits, promethean discourse, energy security, radical transformation, denial that climate change exists, ecological modernisation and climate justice. But it is important to bear in mind that those discourses neither enjoy the same discursive significance (the number of time a discourse is repeated) nor are they fairly represented as Dryzek puts it:

In the global governance of climate change, of course elections do not exist, and national elections make very little contribution to transnational accountability. More generally, states governments are rarely called to account for their act of commission and omission in relation to global concerns; they always have a national interest in defense that can cover up any failures to respond to concerns emanating from public space. Failing that, they can always blame other states or international processes for their own deficiencies. In short accountability within the global deliberative system is currently weak.

Giddens (2009) warns us against the bandwagon effect which according to him is the use of the global warming as a way to legitimate other concerns. That proposition is highly limited regarding the fact that climate change affects people and regions in different ways, the diversity of the discourses on it is illustrative. Furthermore by grounding his analyses on climate change in the realist's theory of international relations and by virtue of being a pro-European (supporter of EU), Giddens has almost no leverage to escape the bandwagon effect (Giddens, 2010). In fact the limitations of the realism and his position (Europe and white body) constitute an enclave in which he thinks and experience the world to produce the narratives of Energy security (one of the relevant discourse on climate change available in the public space). Moreover Falk (1999) notes that: "realism" continues to hold sway in foreign offices and within the academic establishment, especially among those experts who interconnect who interconnect with those who shape global policy. Realism is conflict-oriented and state-centered, dismissing law and morality". In this regard the contribution of Anthony Giddens titled *The Politics of Climate Change* is one of the dominant logic among the competing logics addressing the climate change problem and its insufficiency of reflexivity makes it a part of the problem of the logics of climate change's phenomena. In contrast Falk (1999) proposed a logic encompassing well-being of people and success of markets. But a question remains about Falk's suggestion, who or how many are the people selected for that well-being, knowing that a market-driven economy has been seen as a major cause of inequalities and conflicts in the global south (See, Allouche, 2011). Bearing Giddens and Falk antagonist views in mind, McCarthy (1996) opines the political component of the social construction of meaning become visible when culture no longer refers to *shared meanings* that reflect a people's way of life. Instead according to him *cultural practices* refers to the huge number of institutions, classes, and groups that compete in the articulation of social meaning of things, to the many sites and positions from which ideas and knowledges are developed, and to the conflicts arising out the struggle to stage performances and to affect audiences.

CONCLUSION

The impact of the changing weather on earth can be experienced in various ways. This paper attempted to address the methodological biases content in the homogenisation of differential experiences of the weather through scientific reasonings. The paper has called these overlapping biases, glocality. In this paper the glocality of climate change has been addressed into three main sections namely, the problems of climate change's phenomena, the problem of the ontologies of climate change's phenomena and finally the problem of the logics of climate change's phenomena. Each sections of this essay has tried to highlight some facets of climate change's reality. However in applied metaphysics, reality is assumed to be a matter of degree, that phenomena that are indisputably real in the colloquial sense that they exist may become more or less real depending to the extent of their integration into scientific thought and practices (Daston, 2000). Therefore in this manner the supremacy of scientific mode of knowing the weather is rendered possible by disallowing competing sources of judgement (Rabeneck, 2008). Such a supremacy of science over different alternatives of knowing is not scientific at all. However it illustrates the inherent relationship between scientific knowledge and political power, a relationship we cannot override but only understand and monitor.

REFERENCES

- Allouche, J. 2011. The sustainability and resilience of Global water and food systems: Political analysis of the interplay between security, resource scarcity, political system and global trade. *Food Policy* 36: S3-S8.
- Bob, C. 2005. The marketing of rebellion: Insurgent, Media, and International Activism. Cambridge: Cambridge University Press.
- Brown, O. Hammil, A. and Mcleman, R. 2007. Climate change as the "new" security threat: Implications for Africa. *International Affairs* 83 (6):1141-1154.
- Carius, A. 2009. Climate change and security in Africa challenges and international policy context. *Paper commissioned by the United*

- Nation Office of the Special Adviser on Africa.*
- Cerbone, D.R. 2006. *Understanding Phenomenology*. Bucks: Acumen.
- Cox, R.W. 2001. The way ahead: Toward a new Ontology of World Order. pp. 79-90. In: Jones, R.W. (Ed.). *Critical Theories and World Politics*. Colorado: Lynne Rienner.
- Daston, L. 2000. The coming into being of scientific objects. In: Daston, L. (Ed.). *Biographies of Scientific Objects*. University of Chicago Press: Chicago and London, UK.
- Drumbl, M.A. 2002. Power, wealth, poverty and obligation in International. *Tulane Law Review* 76(4):843:958
- Dryzek, J.S. 2009. Democracy and earth system of governance. Paper prepared for Presentation at Amsterdam Conference on the Human Dimensions of Global Environmental Change "Earth System Governance: People, Places and the Planet. 2-4 2009.
- Dryzek, J.S and Berejikian, J. 2000. Reflexive Action in International Politics. *B.J.Pl. S.* 30: 193-216.
- Falk, R.1999. *Predatory Globalization :A critique*. Malden: Blackwell.
- Giddens, A. 2009. *The Politics of Climate Change*. Cambridge: Polity
- Giddens, A.2009. *The Politics of Climate Change*. Cambridge: Polity
- Giorgi, F., Berg, T. and Aaheim, A. 2010. Socioeconomic consequences of climate in sub-equatorial Africa related to the agricultural sector. In: Royal society of sciences and letters. *Climate change and security*, June 21-24, 2010, Trondheim, Norway.
- Geschiere, P. *The Modernity of Witchcraft: Politics of the Occult in Postcolonial Africa*. Charlottesville and London: The University of Virginia Press.
- Hargens, S.E. n.d. An ontology of climate change: Integral pluralism and the enactment of multiple objects. *Journal of Integral Theory and Practices* 5(1):143-174.
- Hulme, M. 2010. Cosmopolitan climates: Hybridity, foresight and meaning. *Theory, Culture and Society* 27(2-3):267:276.
- Kvaloy, B. and Listhaug, O. 2010. Public opinion on global warming: A comparative study of 48 countries. Paper presented for "Climate Change and Security" which is the 250th Anniversary Conference organized for The Royal Norwegian Society of Sciences and Letters, held in Trondheim, Norway, June 21-24, 2010.
- Mbembe, A. 2002. On the power of the false. *Public Culture* 14 (3): 629-641.
- McCarthy, E.D.1996. *Knowledge as Culture*. London and New York: Routledge.
- Nhamo, G. 2009. Climate change: Double edge sword for African Trade and Development. *International Journal of African Renaissance Studies* 4(2):117-139.
- Rabeneck, A. 2008. A sketch-plan for construction of built environment theory. *Building Research & Information* 36(3): 269-279.
- Revilla, C., Luke, S., Rogers, J.D., Schopf, P. and Trimble, J. 2010. Agent-based Modeling of Climate Change, Ecosystems, and security: A research Program. In: Royal Norwegian Society of Sciences and Letters. *Climate Change and Security*, June 21-24, 2010, Trondheim, Norway.
- Kvaloy, B. and Listhaug, O. 2010. Public opinion on global warming: A comparative study of 48 countries. The Royal Society of sciences and letters. In: *Climate Change and Security*, June 21-24, 2010, Trondheim, Norway.
- Semali, L.M. and Kincheloe, J.L. 1999. Introduction: What is indigenous Knowledge and Why Should We Study It? In: Semali, L., M. and Kincheloe, J.L. (Eds.). *What is indigenous Knowledge?* New York: Falmer Press. pp. 3-57.
- Schimank, U. 1992. Science as a societal risk producer: A general Model of Intersystemic Dynamics and Some specific Institutional Determinants of Research Behaviour. In: Stehr, N. and Richard, V. E. (Ed.). *The Culture and Power of Knowledge: Inquiries into Contemporary Societies*. Berlin and New York: Walter de Gruyter
- Slater, D. 2004. *Geopolitics and the Post-colonial: Rethink North-South relation*. Oxford: Blackwell.