

Scrutiny and Documentary: Hubert Sauper's documentary film, *Darwins Alptraum/Le Cauchemar de Darwin/Darwin's Nightmare* (Sauper, 2004, France/Austria/Belgium)

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This essay is an attempt to understand the significance of the considerable textual complexity and fraught reception history of the film *Darwin's Nightmare* which was made in Mwanza at the beginning of the millennium, released in 2004, screened on television in 2006, and discussed in court in 2008 and 2009. An innovative film in its use of a super light 'minimalist'¹ crew and digital technology, it was described by some as 'ugly', but transcending its aesthetics through its compelling tactile footage, pointed editing and allegorical framework.²

Recent discussion of documentary film has sought to move away from 'structural, semiotic, or cognitive' accounts of cultural expression in favour of 'sensuous, existential, or phenomenological'³ approaches. Anna Grimshaw, whose article I am citing here as an example, writes specifically about an ethnographic understanding of documentary, which is also appropriate for *Darwin's Nightmare*, but the shift she describes is characteristic of a broader trend in documentary theory which sees the complexity of documentary observation, without commentary, but with overt framing and editing decisions, as arising out of the placing of scenes side by side without the framework of overt analysis. This understanding of contemporary documentary highlights in particular the emotional, sensual, and embodied nature of the film as artefact.⁴ Such descriptions point to the ways in which filmmakers in various traditions use the image as a means to reconnect with iconic and indexical referentiality and to underplay the symbolic.⁵ Terms such as 'imbrication'⁶ are also useful tags to capture the entanglement of such referentiality into networks of

unexpected juxtapositions rather than causative relationships in Deleuzian inspired thinking modelled on organic structures such as the rhizome.

Such accounts work particularly well with 'slow films' such as *Sweetgrass*, discussed by Anna Grimshaw, where long periods of beautifully framed observation allow a contemplative frame of mind to develop as in front of a painting. However, more complex and hectic film experiences such as that offered by *Darwin's Nightmare* also exhibit commentary-less characteristics but focus on more fraught and fast moving social situations. Here too there can be a build up of organic connectivity between scenes, a strong tactile sensibility, through the placing of events side by side. How are such films to be understood? Is it only slowness and the perception of beauty or sensuality that allows for a directly referential style to emerge?

Darwin's Nightmare, shot by Hubert Sauper in Tanzania now nearly a decade ago, is a film which weaves a thread through the spaces of Mwanza, a significant fishing town located on the banks of Lake Victoria in Central East Africa. The challenges posed by this film, made with few resources under difficult circumstances, also include an appreciation of observation without commentary. Framing, editing and short intertitles identify and make connections between places and people. Such a film makes it clearer that phenomenological reduction is not an alternative to an understanding of a film as a public representation but a possible response to documentary representation encouraged or suppressed by the decisions of the director, cinematographer and editor.

At a theoretical level there have been attempts to bring together emotional and cognitive or rational responses to films such as that of Torben Grodal with his PECMA flow,⁷ placing perception and emotion at the beginning of a response and cognition further down the line.

Grodal himself acknowledges, however, that perception without some form of cognition is difficult to conceive of, making the linearity of this model a simplification.⁸ What is needed to understand the capacity of the documentary film to stimulate simultaneous emotional and analytical responses is a model which conceives of the environmental, embedded, or phenomenological as not only synchronous but also entangled with responses that engage reasoning. Such a model is proposed in a recent article by the anthropologist Dan Sperber and his collaborators⁹ in which they develops the idea of a ‘massively modular’ mind with concurrent and mutually dependent processes for perception, linguistic processing, inference, epistemic scrutiny, and argument. This model, highly speculative though it is by the admission of the authors, is an appropriate one to describe characteristic responses to recent social activist and environmental documentaries which are testing the capacity of audiences to take in and respond to complex social and economic representations without a guiding commentary.

What is important about the debates around *Darwin’s Nightmare* for documentary film as a whole has been the interplay between understanding documentary as experiential and simultaneously accepting it as a complex analysis of its material. The combination of individual experience with analysis or public representation seems to be difficult and, as when mixing oil and water, in need of some force. Films like *Darwin’s Nightmare* are not playful. They do not experiment with the idea that truth is relative, but work with the ways in which individual perceptions and interpretive processes construct varied representations of events. As the American documentary filmmaker Errol Morris asserts ‘Truth is not relative, it’s not subjective. It may be elusive or hidden. People may wish to disregard it. But there is such a thing as truth. And the pursuit of truth: Trying to figure out what has really happened; trying to figure out how things really are.’¹⁰

The idea that truth is difficult but not impossible to discover is one that fits with an understanding of public representations, such as films, as a reflection of a more general quest for truth undertaken by human beings for whom cognitive activity represents a constant process of information processing on the basis of the perception of the physical world, including communicative acts by fellow human beings and even non-human animals. Sperber and Wilson's model of human cognition and communication concerns the existence of two principles, a cognitive principle (1) and a communicative principle (2) –

- (1) Human cognition tends to be geared to the maximisation of relevance
- (2) Every act of ostensive communication communicates a presumption of its own optimal relevance.¹¹

The key term in their model is *relevance* which is conceived as a mechanism for guiding the interpretation of ostensive acts of communication towards the maximisation of cognitive effects for the minimum processing effort.

Presumption of optimal relevance

- (a) *The ostensive stimulus is relevant enough for it to be worth the addressee's effort to process it.*
- (b) *The ostensive stimulus is the most relevant one compatible with the communicator's abilities and preferences.*¹²

For the discussion concerning the integration of experiential contemplation or perception with higher level cognition this principle can account for the ways in which perception is incorporated into communication.

In discussing the issue of truth in their 1995 postface to the new addition of *Relevance*, Sperber and Wilson argue that there must also be a mechanism to test for epistemic

consistency, an idea that has been developed in the form of two articles.¹³ What is proposed is an understanding of inferential processing involving visual and cognitive or contextual effects which involves interpretation and scrutiny influencing subsequent conscious reasoning.

What is important about the inferential model is that it integrates attitudes and beliefs with the emotions associated with them into the process of perception as well as into the interpretation of interpersonal and public representations. A key point is that inference depends on the capacity to entertain metarepresentations, a cognitive version of self-reflexivity, but not only at one level, rather at several levels, making it possible to not only mean but also contemplate meaning and to share the contemplation of meaning with others. In his chapter 'Metarepresentations in an evolutionary perspective' Sperber makes a distinction between three separate types of metarepresentation — mental, public and abstract, — in a discussion about whether these are part of a general ability to metarepresent or are separately evolved abilities in a multiply modular process. A mental representation is entertained by a single individual, public representations are artefacts aimed at communication, and abstract representations are 'nothing but the content properties of concrete representations, abstracted away'.¹⁴ The significance of the idea that abstract representations are a separate category of metarepresentation rather than a fundamental ability at the root of a general capacity for representation concerns development on from and separation out from interpretation, as well as separation from direct perception or what might be understood as 'firstness' in a Peircean analysis. Sperber's analysis of abstract representations as metarepresentations, or as mental or public representations with their separate characteristics taken away, predicts that contemplating abstract representations involves discernment and scrutiny, an argumentative process, also

not unlike the 'reductions' of the phenomenologist Edmund Husserl, leading to the identification of specific properties, which Sperber describes as follows:

Representations considered in the abstract are reduced to their logical, semantic, and epistemic properties: they may be true or false, self-contradictory or necessarily true, plausible or implausible, standing in relationships of entailment, or contradiction, or warrant, of being a good argument one for the other, of meaning similarity, and so forth. They may be normatively evaluated from a logico-semantic point of view (and also from an aesthetic point of view).¹⁵

Such representations in documentary film are images, sounds, music, dialogue and written texts which taken individually or in combinations are composed in such a way that they can be scrutinized in terms of truth, consistency, or aesthetics. That is in contrast with public representations which are 'normatively evaluated from a communicative point of view as sincere or insincere, intelligible or unintelligible, relevant or irrelevant',¹⁶ and in contrast with mental representations which are 'normatively evaluated from a psychological point of view as 'poorly or well reasoned, as imaginative, as delusional, and so on.'¹⁷

It is these three types of metarepresentation that are useful in understanding how documentary film can involve all of these three evaluative responses in audiences simultaneously. All these representations are themselves represented through metarepresentation. Thus in a public representation such as a film, a mental representation (interview, statement), public representation (the form of a speech) or abstract representation (the composition of the image itself) can be metarepresented and layered in a recursive structure. *Darwin's Nightmare* has been analyzed in terms of its truth, its aesthetics, its sincerity, its relevance, and it has been called 'delusional'. As Sperber et al

understand all of these as subconscious modular processes, they are swift, indeed instant responses, despite their microscopic complexity.

The reception history of *Darwin's Nightmare* is remarkable for the scrutiny the film has provoked. It is not alone in this, as Ruby Rich points out in her account of the film for *Cinema Journal* where she writes that the film is 'poised to enter the academic canon'.¹⁸

He has been both praised and reviled, the attacks carried out by proxy writers aligned with foreign-trade interests. The viciousness of the attacks was reminiscent of those on the young Michael Moore's *Roger and Me*, except that Sauper had not reedited any footage or chronology. He had all his facts courtesy of African-based NGO sources. Most recently, the Tanzanian government has gone after both Sauper and his subjects in Tanzania, who have been punished with firing, arrest, and threatened deportation.¹⁹

The question of why the film was so closely scrutinized is not answered entirely by reports about the alarmed and alarming response of Tanzania's president Jakaya Kikwete who understandably was distressed by the idea that the film had caused a drop in exports,²⁰ or about 'business interests'. The film has provoked scrutiny from several different angles, some of which praise the film and some of which attack it. The multiplicity of angles of attack relate not only to the three different levels of metarepresentation (mental, public, abstract) described by Sperber but also to the way in which the film exploits further levels of metarepresentation in the organisation of its material into observation, interviews, media interventions, and intertitles.

The course that this particular version of the documentary debate took was a rollercoaster ride for the film, beginning with multiple prizes and high praise from the festival judges

community for its emotional immediacy. This response emphasised the response to scenes which showed homeless children putting themselves into a deep sleep in the open streets by sniffing glue, the debilitated state of a woman suffering from AIDS, or the sight of women walking barefoot through fish skeletons covered in maggots. This affirmation of the film can be understood here as an acceptance of its representation of life for the poor and destitute in Mwanza, a representation which can be understood as 'abstract' in the sense that it is its truth of the image that is disturbing. All of these scenes involve dialogue with the filmmaker, are filmed with a handheld camera so that they both show and mean, are both evidence and part of an act of communication.

The affirmation of the film by festival audiences and judges was followed by widespread debate and concern in France from the television audience which involved calls for action in response to the film.²¹ The action called for was a boycott of Nile perch filets indicating that the connection made in the film between trade in weapons and the transportation of the fish, as well as the link between famine and the high cost of food created by international trade, had been understood by audiences as directly involving them as the consumers. The film here is understood as an argument, a public representation calling for change.

Ulrich Beck has analysed the nature of these kinds of responses to international media in his book *Ecological Politics in an Age of Risk* in a way that also provides part of explanation for the continued scrutiny of *Darwin's Nightmare* after this point. Beck cites a case in which a German television programme about maggots in fish brought about mass job losses in the fish industry. He notes that 'the employees close ranks with their employers, and protest against the "untrue" and "exaggerated" representations in the mass media.'²² This parallels the effects reported of the broadcasting of Sauper's film – the loss of trade followed by the protests of local producers.

This response was thus followed by vociferous critique and condemnation of the film for sensationalism,²³ and misrepresentation.²⁴ Daren Kinsey's analysis of the film from the perspective of an environmental historian is a typical example of an expert's response to what is perceived as a lay understanding of environmental issues. In his analysis of the film, which he describes as 'sensationalist and even delusional',²⁵ Kinsey scrutinizes the idea that the Nile perch is an allegory for globalisation, arguing, 'The Nile perch is not a demon or a zombie. It is only one species in a long list of others that have been part of progressive state-funded and state operated programs meant to improve and diversify freshwater fish fauna for more than 150 years.'²⁶

The most remarkable scrutiny of the film was carried out by the film historian François Garçon in newspaper articles²⁷ and the book mentioned above in which he proclaimed the right as an historian to 'interrogate the film like any document'.²⁸ Garçon analyzes in particular the motivation for the film, claiming that it is the work of a naive, European filmmaker looking at his subject from a postcolonial position, stereotyping Africa as the 'dark continent', failing to differentiate between peaceful nations such as Tanzania and others, and making mistakes in his attempts to make a successful career. He asserts the right to critique the film as an historical document giving a comprehensive account of the process for scrutiny required of such:

As a documentary, *Darwin's Nightmare* thus became the kind of material which the historian is legitimately allowed to interrogate just like any document on which historical work is based, thus allowing him to verify the sources, to authenticate the speakers, to compare the evidence in order, all things considered, to sort out the truth from the lies and to assess what this talk was all

about: an accurate perhaps even faithful portrait of reality in Tanzania, or pure fabrication?²⁹

Garçon's attack on the film was successful enough to bring about a change in media reporting on it, with Sauper now accused as a 'fraud' and compelled to defend his approach as a filmmaker. Muriel Fitousi reported on the sequence of arguments in an article for the newly launched satirical online news site Bakshish³⁰ at the point where Garçon appeared to have the upper hand and had turned the celebratory public response to the film away from an acknowledgement of its achievement in making the plight of the poor in Mwanza visible, towards a condemnation of the film as distorted and fraudulent. A later article by Zoe Lamazou³¹ followed up the story with the results of the libel case taken by Sauper against Garçon, a result that was also reported in *Le Monde*.³² So persistent was the attack that by 2008 Sauper had sued the historian for libel and Garçon was sentenced to a fine of 500 Euros for claiming that Sauper paid and manipulated children in the film to act out some scenes. On appeal the court confirmed the judgement (on 11 March 2009) that Garçon did not have any basis for accusing Sauper of manipulating the children in the film.³³

What is most interesting, however, is the defence and renewed analysis of the film as 'creative'³⁴ or 'postmodern'.³⁵ In an extended analysis of the film Arno Russegger confronts some of the issues that come out of the implications of the phrase 'documentaire de création' without mentioning at any point the legal context but suggesting an understanding of *Darwin's Nightmare* as a 'postmodern' documentary film. Russegger draws on the work of two documentary filmmakers, the constructivist Peter Krieg and the pedagogical writer on documentary technique, Thomas Schadt. Arguing that documentary credibility is based on sincerity rather than authenticity, he interprets the film as self-referential, using

postmodern techniques like those used by Michael Moore to ‘manipulate reality’³⁶, arguing that it is built on a dramaturgy ‘based on a deliberate restriction of information’³⁷. He concludes:

Hubert Sauper, like other postmodern film directors, disposes of an individual cinematic calligraphy; he is an auteur in the best sense of the word. His interpretations of what happens rest on the knowledge that there is no such thing as objective reality and there certainly can be no neutral reproduction of it. [...] *Darwin’s Nightmare* distinguishes itself through a visual language that easily transcends the cinematic design of the single moment. Tanzania ultimately emerges as a microcosm that facilitates a concentrated, because exaggerated, recording and presentation of the general structures of contemporary society.³⁸

This last response to the film is particularly instructive as it represents a retreat from the idea that the documentary can be evaluated in terms of the truth of its evidence. The legal response, however, rested on the point that Sauper did not manipulate reality, with evidence from his archive of footage taken for the film demonstrating the consistency of his filming and the lack of manipulation. It might thus be worth considering whether the question of truth disputed in the film relates to the film as a whole, as a single representation, or to its content divided into units of scenes, interviews, even individual statements.

The debate generated around the film has thus not only concerned scrutiny of the facts about the environmental impact of the Nile perch on lake Victoria, and about the distribution of the economic benefits of the development of the fish filleting industry around the lake, but also about the capacity of documentary film as a form of public

scrutiny, to be part of the development of transnational media to scrutinize the globalization of the world economy. In a sense, were it not for its threatening nature, the responses of political and business interests to the film indicate a healthy capacity for debate which is part of the purpose of the documentary film in its attempt to shift opinion about the benefits of international trade to Tanzania and other developing national economies on the African continent. Ironically, the responses of the film critics seem to downplay the capacity for documentary to 'make a difference' by denying the capacity for such films even to relate to truth, directly contradicting the attempts of social activist documentarians to use the medium to raise awareness.

It is important then to consider in more detail the question of how a film like *Darwin's Nightmare* relates to meaning and to truth. The following discussions about the question of embodiment, the interpretation of the documentary interview, and on observation are an attempt to see how the inference model of communication and cognition might be an alternative to the obsessive and antagonistic scrutiny of Garçon as well as to the constructivist answer offered by Russegger.

Relevance is a theory of communication and cognition rather than a theory of meaning.

While Saussurean and Peircian semiotics are concerned with the relationship between the sign and the signifier or the symbol type and reference, theories that derive from linguistic pragmatics explore the use of signs in utterances. The overlaps between Wittgenstein, Grice and Austin and the histories of thought that descend from them concern the insight that referentiality is an act, a form of doing, making the sign part of a process involving agency or intentionality.

As a theory of communication rather than meaning, the concern is with the question of how the multiplicity of interpretations available in ambiguous or vague utterances are narrowed down so swiftly in conversation in practice. An insight that emerges from this approach is that the process of disambiguation itself is or can be part of what is communicated, and further investigation into the issue of what happens on the path to interpretation yields other possibilities for the productivity of the process. Scrutiny of the source (in most cases the speaker) in terms of competence and trustworthiness, and of the utterance in terms of its form and content 'which may be more or less believable independently of its source'³⁹ are processes which can be seen as involved in or subsequently parasitic on the comprehension process itself.

In terms of documentary film, the scrutiny of the image and of the sound track can yield information in a multitude of forms which can be considered either as direct perception – seeing or hearing for oneself – or as mediated. Grodal discusses the differences between direct perception or simulation and communicated meaning or theory of mind, as simultaneous paths in a dual process model that are encouraged or discouraged by the form of the film.⁴⁰ Communicated meaning in Grodal's model is activated by the salience of form.

In relevance-theoretic terms, the discovery of inconsistencies in the process of the perception of the film would have this effect. As Sperber et al put it 'unless one option dominates the comprehension to the point of inhibiting awareness of the alternatives, it takes a typically conscious decision to resolve the issue. Making such a decision involves engaging in some higher order or metarepresentational thinking about ones own beliefs'.⁴¹

The interpretation of Sauper's film depends on the viewer's acceptance of the world as it is represented. One reason for the critique of the film is Sauper's focus on spaces

associated with the informal economy of the town, although the development of an infrastructure for an internationally successful fish processing industry in Mwanza, assisted by the European Union and the International Monetary Fund, was and still is central both to the town and to the film. By expanding the focus Sauper makes more visible those spaces which tend to be left out in public representations of economic success, particularly those that are designed to promote further economic activity and development. This was done, as Sauper has argued, to broaden understanding of the effects of the liberalisation of global markets on local communities to include the social and environmental disruption it also brings even when there is success in economic terms. Frédéric Giraut has argued that this is an achievement of the film and a reason for it to be used in teaching about the effects of globalisation on the developing economies of the southern hemisphere, including nations like Tanzania.⁴²

Its main contribution is without doubt the demonstration of the imbrications (which does not imply dependent or causal connections) of, on the one hand, formal economies (the development industry, international consultancy ...) and informal economies (security services, the local fishing boats, the salvaging and processing of waste products after the filleting process...), and of legal activities (the global food industry, the international flight industry...) and illegal activities (arms trafficking, prostitution...) on the other. With this the film clearly touches on one of the most fundamental aspects of globalisation as it applies to the African continent.⁴³

Giraut's interpretation of the film from the point of view of political geography is one example of how interpretation both for and against the film involves, as Sperber et al put it

‘engaging in some higher order or metarepresentational thinking about ones own beliefs’.⁴⁴

Giraut’s response to the complaints that the nice parts of the town were excluded involves an understanding of it as a deliberate corrective to the one-sidedness of public representation aimed at liberalising international markets.

Arno Russegger takes an entirely different strategy, arguing that the whole film is ‘a concentrated, because exaggerated, recording and presentation of the general structures of contemporary society’ as cited above, also extending his reinterpretation of this and other possibly inconsistent aspects of the film into a strategy for understanding it as a whole in relation to his beliefs about contemporary documentary film strategies. Further evidence to justify this interpretation is given by the crudely typed and somewhat theatrical intertitles which introduce participants in the style of a morality play: ‘Sergey, Dima, Jura, Vladimir, Stanislav, the “fish cargo pilots”, Dimond, “factory owner, turns big fish into small filets”, the street children Msafiri, Franky, Shabani, Mustafa, Josephu, “strolling the streets of “fish city”” and Raphael,” for one dollar a night he protects the National Fisheries Institute”, Eliza the “girlfriend of many pilots”.’

Russegger takes this to a further metalevel by seeing the whole film as a film as intended as a ‘reflection’:

Hubert Sauper possesses a keen sense of different types of self-referential structure; their materials drawn from reality, they can be built into his films without great effort, discreetly and casually, as visual ambivalences, contrasts or analogies. Paradoxically, these self-referential structures amplify the perception of the authentic because, despite the chaotic impression reality evokes at first

glance, we nevertheless gain the impression that it still offers evidence that (an) order can be imposed.⁴⁵

The postmodern techniques that Russegger perceives are largely the use of media as a means to bring the issues into the film: photographs of a crashed plane, a radio news item reporting that 'The UNO World Food Programme needs \$17m to feed two million starving in central Tanzania,' a television programme on the same theme. A sequence shot at the IUCN International Ecological Congress in Kenya includes a film projected for delegates on the Ecology of Lake Victoria which reiterates the story of the introduction of the Nile Perch to Lake Victoria and expounds a theory of the impact of the fish on biodiversity, including a theory that the dominance of the species is leading it to eat its own young. This film within a film is then exposed to a critique in which the delegates from countries around Lake Victoria declare 'The message is clear. Do not give the negative side only. Also give the positive side and then weigh the positive and the negative. You may find that the positive outweighs the negative, and then you sell your country.'

Arguing for the film as self-referential and deliberately exaggerated puts it into the category of an auteurist film, solving the problem of the truth of its representation by deferring the questing to a higher meta-level. The truth of the film becomes like that of a fictional film, in which truth is a matter of outputs rather than inputs. However, as indicated at the outset of this essay, this is a problematic conclusion for activist documentary which strives not simply for sincerity or for higher truth, but for evidence for positions taken.

Self-referentiality or metarepresentations, far from indicating a retreat from truth, involve a more complex understanding not only of the world but also of cognition in which truth is arrived at via an integrated process of interpretation and scrutiny. In the case of documentaries which eschew commentary and offer a variety of techniques for representation, such processes can lead either to an interpretation of the image as image, or to an interpretation of the image as a reported public representation, or to an interpretation as metaphor. All of these are metarepresentations which can be made simultaneously. It is important here to stress that this is intended not merely as a re-expression, using a different vocabulary, of the arguments about self-referentiality that Russegger brings out in his analysis and that are part of the understanding of French *cinéma-vérité*. In that analysis self-reflexivity is a technique used to question the possibility for the direct perception of reality claimed by direct cinema, drawing attention to the constructed nature of the sign. Aspects of cognitive theory have followed up on this quality of the sign, but more recent debate has concerned the engagement of the emotions and senses in the experience of cinema. Thus what is to be explored here is how these aspects of the perception of *Darwin's Nightmare* play a significant role both in the assertion of a truth content, and in its assessment.

As a film, Sauper's *Darwin's Nightmare* demonstrates the flexibility of digital filming and the possibilities for entering into day-to-day life with even more spontaneity and participation than documentary has achieved before. As Rich argues, however, it is not the production circumstances that make the film, so much as the decision to focus on place and on individuals whose embodied knowledge of the conditions of human life in Mwanza constitute the 'wisdom' of the film. Sauper draws the debates in the natural sciences about biodiversity in Lake Victoria,⁴⁶ and in the social sciences on malnutrition, social and

economic development in Central East Africa,⁴⁷ out of the contribution of local people rather than experts. Thus the story of the introduction of the Nile perch into Lake Victoria is told in different ways by the night security guard at the fisheries institute on the one hand, and a factory owner on the other. The social issues in the town and the settlements of fishermen around the lake that have contributed to the spread of HIV and AIDS, are told by a former teacher, a former street child who has achieved success as a painter, and a local pastor as well as a woman close to her own death.

In her essay on *Sweetgrass*, cited at the beginning of this essay, Anna Grimshaw argues that the elimination of commentary, the framing, and the use of long takes permit an experience of the film as about feeling rather than information.⁴⁸ In her arguments in favour of including such films as *Sweetgrass* within the category of ethnographic filmmaking, Grimshaw refers to the MacDougalls' experiments with observational documentary,⁴⁹ and draws out beauty and slowness as the condition for experiencing the film directly. This is one of several techniques developed by documentary filmmakers to direct the inferential process towards engagement with the image and the soundtrack leading to cognitive effects which are about assessing their logic and truth value as images. The withdrawal of the presence of an authorial voice, hyperreal photography, and the framing characteristics of a 'privileged camera style' identified by MacDougall are all ways in which this is achieved in 'slow' films. Grimshaw's identification of the combination of close-up sound with extreme long shot photography is a case in point.⁵⁰

In the case of *Darwin's Nightmare* several strategies can be identified which direct the inferential process towards engagement with the image, 'blocking out other possibilities' as Sperber puts it. *Darwin's Nightmare* is characterised by its intense focus on character

through observation and interview, and its use of the consequential cut which systematically emphasises the spatial links between wealth generation and deprivation. In both of these the camera and the microphone are used explicitly as devices to record first hand and second hand (or 'witness') evidence for scrutiny. These images and sounds are also produced as part of a process of filmmaking, as evidence for which it will also come under scrutiny as part of the reception of the documentary film.⁵¹

What is proposed here is to show how the close scrutiny of these interviews and landscapes involves sensual, emotional and rational responses coordinated by inferential processes guided by the principle of relevance. This is in contrast with attempts in documentary film theory to identify 'modes' of documentary production.⁵² First it is a scrutiny of reception rather than production processes and second it is not concerned with the ontological status of the image but rather with viewers' beliefs about the world including beliefs about film images, about filmmakers, and about participants in documentary film. All of these are radically contingent in a model which asserts systematic variety in interpretation as a necessary corollary of the individual nature of brains.⁵³ What is surprising, and what requires explanation, is convergence on a similar or related interpretation by many participants.

This scrutiny then is less about modes of filmmaking, and more about loosening the relationship between the film artefact and the film viewer so that engagement with the image becomes a more clearly motivated investment. In their theory of *Relevance* Sperber and Wilson demonstrate that comprehension can be a more complex process than expression because it can involve an additional layer of metarepresentation. In an article explaining how inferential communication might have evolved before language, Sperber

sketches out a series of five scenarios in which two characters, 'hominic ancestors' named Peter and Mary, develop the capacity for symbolic communication without language.⁵⁴ The scenario begins with Mary picking berries and with Peter observing her. At the first stage Mary is not aware of being observed and Peter's conclusion that the berries are edible on the basis of seeing Mary picking them is a 'first-order metarepresentational belief', that is he believes that

Mary believes,
that these berries are edible

In the second scenario Mary is aware that she is being observed, but Peter is not aware that Mary is aware. Thus Mary too can have 'first order metarepresentational intention' to use her behaviour to make Peter believe that the berries are edible. In the third scenario 'Peter is aware that Mary is picking berries with the intention that he should come to believe that these berries are edible' but Mary doesn't know Peter is aware of her intention. This is now a 'second-order metarepresentational belief' for Peter.

Mary intends
that he should believe
that these berries are edible

In the fourth scenario 'Mary intends that Peter should be aware of her intention to inform him that the berries are edible' perhaps because she is worried he is hungry and knows he will try the berries if he thinks she means him to. Thus the 'second-order informative intention is, of course, a third-order metarpresentation to the effect: That Peter should believe

That Mary intends
that he should believe

that these berries are edible!

The fifth scenario is the one Sperber sees as reaching the level of symbolic communication that is characteristic of the human species. In this one 'Peter is aware that Mary intends him to be aware of her informative intention'. Symbolic communication is thus a matter of a 'fourth-order metarepresentational belief.' Sperber accounts for this step change by speculating: 'Peter might come to have this belief when he notes that Mary is ostensibly making sure that he is paying attention to her behaviour by, say, establishing eye contact with him, picking the berries in a somewhat formal manner, etc.'

The significance of this analysis of the basis for symbolic communication lies in the ways in which the sensuous (noticing the senses) and the existential (holding beliefs) come to be part of the process. It is also clearer how truth comes to be at issue in that someone can intend another to believe something that is not true. This issue is explored by Sperber et al in the essay on 'epistemic vigilance' in which the claim is made 'that humans have a suite of cognitive mechanisms for epistemic vigilance targeted at the risk of being misinformed by others.'⁵⁵

In the world of interpretation the historian or forensic expert is concerned with the capacity of photography to store visual information about phenomena at a particular moment and in a particular place. The camera is explicitly used in this way in activist documentaries when filmmakers enter spaces usually closed or inaccessible to the general public or when they confront public representatives of business interests about company practices or policies. Activist scrutiny of the world can be represented in documentary film because it involves use of fundamental capacities for 'personal directedness' as well as 'interpersonal direction'

as described by Carpendale and Carpendale in their analysis of pre-linguistic development in communication in infancy.⁵⁶

In *Darwin's Nightmare* the camera is used from the beginning to the end of the film to record responses from local people to questions about the importation of goods via the freight planes. Five and a half minutes into the film a foreman on the shore of the lake where fish is being landed and weighed is asked about the planes landing in the airport.

Intertitle:

Marcus
Airport police officer

Marcus: They come to take every day. But they put here under supervision of who some are in charge (smiles into the camera) Fishermen in charge. (Noise, looks up to aeroplane overhead.)

Off screen voice asks: What is the plane bringing from Europe?

Marcus: It is empty. [Empty

Off screen voice: Empty, coming] [empty.

Marcus: Coming empty], yes. They come to load the fish.

At this stage of the film the motivation for the question is not explicitly given. The repetition of the word 'empty' can be interpreted as a request for elaboration, and the foreman responds by explaining what the empty planes are coming for. However, this very brief snippet of dialogue introduces the idea in the abstract of the planes coming empty to Mwanza, an idea which will be developed later in the film and which is also mentioned in much of the discourse about the film. At the same time it introduces a person who works in Mwanza who is labelled an 'airport police officer' a role Marcus explains as a 'fisherman in charge.' The connection with the airport is unclear. The filmed image reproduces the environment, the lake in the background, the noise of the air traffic, the dogs and the

people, as well as gestures and facial expressions so that the viewer can form conclusions about Marcus, his state of well being, feelings about his status and so on. The dialogue thus takes place within a context with an extensive amount of manifest information. From the dialogue we can conclude amongst other things:

1. *Marcus is an airport police officer, and he believes that the aeroplanes come to the lake empty.*

From the first question we can also infer a belief held by the off-camera questioner.

2. *The questioner thinks that the plane is bringing something from Europe.*

From the repeated question we infer that the invisible person – who we take to be the director – is checking he has understood correctly as it contradicts his assumption. It is a very swift exchange but from the decision on the part of the editor to include it in the film a further inference can be made:

3. *It is the filmmaker's intention that the viewer should be curious about what is in the plane.*

The dialogue has already aroused this curiosity and so the intention is fulfilled by the insertion of the conversation. At the same time, an additional process may also be in play in that we have scrutinized Marcus's response to see if his face or manner reveal anything about what might be in the plane or if he may, as a privileged supervisor of the other fishermen, be concealing information.

If Sperber's speculative model is correct then many such perceptions and interpretations are happening intuitively and almost instantaneously on viewing the film. The process of going back and making them explicit here is also a process of checking the initial response

and confirming it or seeing if unnoticed details may provide evidence for a different response. Such analysis systematized is common for conversation analysis and cultural analysis and indeed, legal scrutiny, and is also a means for demonstrating how human processes for scrutiny and reasoning can be and are used systematically.

The point here at this stage is that the interview introduces into the film a wealth of information only part of which is explicitly volunteered making it very difficult for the participant to control the nature of his contribution. It is also difficult for the filmmaker to predict the outcomes of such interviews so that the encounter can be seen merely as an attempt to begin a structured process through which questions are raised about the planes coming into and out of the airport.

Such a documentary is obviously not about being 'creative' with the subject it treats but it is about developing the techniques of this documentary film so that it is in a position to scrutinize local working practices and living conditions and hence increase the visibility of the impacts of the liberalisation, deregulation, and globalisation of this developing economy. It is these techniques which have been developing in some forms of social activist documentary by restricting the metarepresentational device of the commentary as a technique which narrows interpretation, and by developing different forms of montage, which require interpretation for the film to generate meanings beyond the perception of the material. These strategies are much more risky than commentary. They require individual audience members to invest in what is presented, to notice detail, and to use existing knowledge to draw out its relevance. This is a democratic form of documentary that in fact requires scrutiny as part of its strategy.

The questioning about the transportation of weapons continues at intervals with different characters throughout the film. The factory owner, the night watchman, and the women in the bar all express puzzlement at the question and its implications. A journalist, Richard Mgambe, a newspaper account of the discovery of a cache of weapons in a plane that landed in Mwanza, and an indirect admission from one of the pilots put the case for the filmmaker's suspicions, while local opinion demonstrates at least that it is not a matter of common knowledge. This investigation is, then, intrusive in this community, but its investigative spirit turns into a focus on a subject of a different more diffuse kind. This is the gradual build up of a portrait of the people in Mwanza and their living conditions.

In presenting a portrait of a community Sauper runs the risk of communicating an attitude towards it and so must motivate it in such a way that it does not turn into a judgement.

Historically the figure of the outside investigator has been a means through which a neutral, programmatically unconcerned stance can be maintained, a device which has been used in narrative fiction by authors as diverse as Franz Kafka and Raymond Chandler. Sauper's questions about the famine in central Tanzania, about the quantity of fish exported, the cost of fish locally, about the street children and where they sleep and so on divert attention away from scrutiny of the individuals towards the broader social and economic circumstances, but of course the individuals still shine through.

A hostile interpretation of the film can thus focus on the individual stories and claim a malicious intent to portray them in a bad light. The contribution of Raphaël Tukiko provoked a row over whether he was exploited by the filmmaker or whether the filmmaker was pulled along by him. What can be seen from the film, and subsequent encounters with the media in the wake of the film, is that he is an extraordinarily cooperative communicator, repeating

the questions put to him, and elaborating on any point that comes up. The point here is that the audience capacity to read character and interest in doing so is part of what is exploited by documentary filmmakers.

The story of Eliza also emerges without commentary but in relation to Sauper's attempts to get information out of the pilots about their cargo. Her encounters with the camera are uncomfortable. She is dragged into the frame by one of the pilots who appears almost to bully her as she sings. She lies down on a bed and whispers her thoughts about her life and what she would like to be. Other women explain how they are drawn into prostitution through the offer of food and drinks and describe the brutality of the men. When it is reported that Eliza has been murdered, the camera records their faces as they watch the footage of her from the beginning of the film. As with Raphaël Tukiko, Elizabeth Maganga Nsese is a cooperative communicator struggling to express herself in English and willing to speak about her aspirations. It is her face, however, that expresses the most about her situation, as with another well known documentary figure, Marilù Parolini, in Jean Rouch's *Chronique d'un été*. An understanding of Eliza's contribution to the film is likely to involve an emotional response on a personal level.

Documentary film, relying on the interaction between the visual and different levels of verbal representation, can be understood as a form which 'externalises'⁵⁷ or makes sensible⁵⁸ (Ranciere) the environmental and social consequences of human activity. It metarepresents several different forms of discourse including: interpersonal conversation, the public meeting, the intertitle, and mediated reporting. The multiple outputs of these different forms and different kinds of processing mean that film creates a manifest

environment in which information can be simultaneously accepted and rejected in different ways.

The 'creativity' of the filmmakers in the construction of this montage is one aspect of the film which itself comes under scrutiny with the possibility arising that a viewer may reject some interventions while accepting others based on a process of reasoning. An important aspect of a multiple and simultaneous process of interpretation is the testing of information through comparison so that belief in what is derived from the film is not based on a single factor but on judgement based on the information available.

Although there are strong forms of analysis the overwhelming issues are the consideration of the social conditions in Mwanza in the abstract. The truth of these conditions is what the film is ultimately about and also what audiences initially responded to. It seems inappropriate to say that these conditions are 'abstract' representations which Sauper achieves via his aesthetic of filming from below using the tactile possibilities of his medium. Yet the images of the street kids melting down the fish packaging to create glue and then sniffing it in plastic bottles to get to sleep, shot without commentary, are interpretable as images for contemplation. There is no comment about the number of people who have lost limbs and get around on crutches or about the working woman interviewed who has lost an eye but their movement and energy communicated through the film poses questions about safety and healthcare. There is no comment about the stark contrast between the hygienic conditions of work in the filleting factory, so heavily invested in, and the working conditions for those processing the fish frames.

Clearly, however, the film also makes its arguments apparent through framing and editing.

The glue sniffing episode is preceded by an interview with the packaging company, an

international concern which is doing well as recounted by the local management. The cut from this slightly embarrassed and smug scene to the street children melting the packaging down poses an obvious question about the responsibilities of business for their products once they have fulfilled their purpose.

About half way into *Darwin's Nightmare* there is a scene which became the centre of the dispute between Hubert Sauper the director of *Darwin's Nightmare*, and the film historian and champion of neo-liberalism, François Garçon. A meeting is being held in which a delegation of the European Union is reporting on a tour of the factories and facilities in Mwanza used to produce Nile Perch filets. As the chair of the meeting explains, the perch filets now represent Tanzania's largest export product. The meeting is filmed from the back of the gathering of delegates and as the chair is speaking the sound of a lorry is heard and the shot cuts to a view of a street. The camera pans back up from a focus on three of the street children to the meeting and it becomes apparent that it is taking place on a roof terrace. Another speaker at this point is praising the world class level of the fisheries in terms of its sanitation and the scene cuts to a shot of some dogs washing themselves in a trough. A one-legged boy who gets around on crutches and has just been visible in the shot of the street next to the meeting, is inspecting a tin. In the next shot a similar such pot is being used to cook some food on an open fire on the beach. The shots thus move seamlessly from the meeting about the export of foodstuffs to Europe to the distribution of an inadequate amount of food to local homeless children which turns into a scuffle in which some run away with handfuls of rice and some are left with none.

Although the dispute between Sauper and Garçon was about the authenticity of the fight over the food, what is important about the sequence is the link in physical space created

between the local street children, the local business community and the European Union delegation. The film works against the ways in which the local issues are rendered invisible by the success story told on the roof terrace. Wherever the evidence of the prosperity brought by the fish boom might be it is not apparent in this space where the fish is caught and processed.

For the multiple approaches to coexist in the film it is necessary for the viewer to be able simultaneously to both believe and doubt what is seen and heard, namely to scrutinize it. Drawing from recent discussion on deliberative democracy and the role of argumentation in cognitive approaches to communication, this simultaneity is an essential aspect of democratic documentary filmmaking which is being developed by environmental documentary filmmakers in particular in order to represent and question the complex structures of contemporary socio-economics.

Beyond the film, however, there are two allegories through which the film can be interpreted. The first is imposed on the film through the marketing device of the film poster and DVD cover in which an image of the fish is followed beneath it by an image of a fish skeleton, which itself is morphing into an image of a Kalashnikov which then appears below. This logo to the film together with the word 'Fish for the world – Weapons for Africa' – represents the concept that originally motivated the making of the film.

The image can be understood as a visual representation of the argument in the film that trade in fish and in weapons are connected. It is first understandable in relation to various pieces of information which emerge out of the narrative in which the filmmakers search for evidence that weapons are being transported into Mwanza on the cargo planes which then leave with the frozen Nile Perch filets. As with many examples of investigative filmmaking

the evidence is hard to come by in the secretive and highly secure world of international trade and the connections made are indirect. Nevertheless the insertion of a news report about a case where weapons were found and confiscated, an interview with a journalist who explains how easy it is to transport weapons via cargo planes flying all over the continent, and a drunken confession on camera from the pilots with whom Sauper travels, establish that trade in food and trade in weapons are linked on the continent via the freight lines. The image is a much bolder statement than the argument as it is established in the film.

As an allegory, however, the image sets up another chain of associations which integrate what is only one strand in the narrative of the film with the general picture of life in Mwanza. It is this double allegory which is actually an integration of the factual assertion with a metaphorical one that is the source for the sense that the film somehow magically integrates all its different strands. In the second version the Nile perch represents the top of the food chain. In the first interpretation the nutritious fish is replaced by the Kalashnikov whereas in the second the fish and the Kalashnikov represent the same thing — the power of the strong. Between the fish and the Kalashnikov the people — the carcass grasping the Kalashnikov — are malnourished or slaughtered in war. As an allegory of capitalism the image represents the survival of the fittest as the way to describe the opening up of African national territories like Tanzania to international trade, a process which has been decried in several documentaries such as *WE FEED THE WORLD* (Erwin Wagenhofer, 2005) and the more recent *Blod i mobilen/Blood in the Mobile* (Frank Piasecki Poulson, 2010).

Sauper himself pushes for this allegory in material written for the DVD booklet and website under the title 'Survival of the fittest':

The old question, which social and political structure is the best for the world seems to have been answered. Capitalism has won. The ultimate forms for future societies are "consumer democracies", which are seen as "civilized" and "good". In a Darwinian sense the "good system" won. It won by either convincing its enemies or eliminating them.

In *DARWIN'S NIGHTMARE* I tried to transform the bizarre success story of a fish and the ephemeral boom around this "fittest" animal into an ironic, frightening allegory for what is called the New World Order.⁵⁹

In allowing information to come filtered through the life stories of his participants Sauper does not appear to be aiming at exaggeration or indeed at sincerity but rather at a more complex understanding of the embodied impacts of globalisation. Thus portrayal of the fishing town of Mwanza is a montage of different acts of communication. These involve the viewer in the interpretation of spontaneous, pre-arranged, and staged scenes guided only by minimal intertitles which name and participate in the narrative by ironically tagging the participants. The observational strategy of the interpersonal encounters relies on open and complex processing of representations. Around the film, however, an argument is developed through marketing and critical discourse, which uses allegory or extended metaphor. Although this helps to create coherence, viewers are still called upon to make their own sense of the series of observed scenes, interventions and interviews with the potential either to reject or indeed to develop the vision found there.

¹ Hubert Sauper, 'In the Heart of Darkness', *Darwin's Nightmare official site*. <http://www.darwinsnightmare.com/darwin/html/startset.htm> (accessed December 20, 2011).

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- ² Steve Erickson, 'Darwin's Nightmare', *CinemaScope*, 2006. http://www.cinema-scope.com/cs24/cur_erickson_darwin.htm (accessed May 29, 2010).
- ³ Anna Grimshaw, 'The Bellwether Ewe: Recent Developments in Ethnographic Filmmaking and the Aesthetics of Anthropological Inquiry', *Cultural Anthropology* vol. 26, no. 2 (2011): pp. 247-262, 256.
- ⁴ Two book-length examples are Belina Smail, *The Documentary: Politics, Emotion, Culture*, (New York, Palgrave MacMillan, 2010) and Keith Beattie, *Documentary Display: Reviewing Nonfiction Film and Video*, (London: Wallflower, 2008).
- ⁵ I am using these three terms from Charles Sanders Peirce in the way that Terrence Deacon uses them in *The symbolic species: The co-evolution of language and the human brain*, (London: Penguin, 1997), 73-82. There are different interpretations of the iconic, indexical and the symbolic but this version is useful for the way in which it helps to demarcate the territories of structural and phenomenological approaches to symbolic language as represented by approaches such as Grimshaw's.
- ⁶ Grimshaw, p.256.
- ⁷ See Torben Grodal, *Embodied Visions: Evolution, Emotion, Culture, and Film*. (Oxford: Oxford University Press, 2006). See also Torben Grodal, 'The PECMA Flow: A General Model of Visual Aesthetics', *Film Studies*, no. 8 (2006): 1-11.
- ⁸ Grodal, *Embodied Visions*, p.152.
- ⁹ Dan Sperber, Fabrice Clement, Christophe Heintz, Olivier Maccaro, Hugo Mercier, Gloria Origgi, and Deirdre Wilson, 'Epistemic Vigilance', *Mind & Language* vol. 25, no. 4 (2010), pp. 359-393.
- ¹⁰ Errol Morris, 'Editorial: There Is Such a Thing as Truth,' 2 May 2005. <http://errolmorris.com/content/editorial/npr505.html> (accessed November 25, 2011). See also 'Lecture: The Anti-Postmodernist Postmodernist', <http://errolmorris.com/content/lecture/theantipost.html> (accessed November 25, 2011).
- ¹¹ Dan Sperber and Deirdre Wilson, *Relevance: Communication and Cognition* (Oxford: Blackwell, 1986/95), 260.
- ¹² Sperber and Wilson, p. 270.
- ¹³ Sperber et al 'Epistemic Vigilance'. Hugo Mercier and Dan Sperber, 'Why do humans reason? Arguments for an argumentative theory', *Behavioral and Brain Sciences* vol. 34 (2011): 57-11.
- ¹⁴ Dan Sperber, 'Metarepresentations in an evolutionary perspective', in Dan Sperber (ed), *Metarepresentations: a multidisciplinary perspective* (Oxford: Oxford University Press, 2000), pp. 117-137, 128.
- ¹⁵ Sperber, 'Metarepresentations', p.127.
- ¹⁶ Sperber, 'Metarepresentations', p.128.
- ¹⁷ Sperber, 'Metarepresentations', p.128.
- ¹⁸ B Ruby Rich, 'Documentary disciplines: An introduction,' *Cinema Journal* vol. 46, no. 1 (2006), pp. 108-115, 112.
- ¹⁹ Rich p.112.
- ²⁰ Xan Rice, 'Tanzania sees malice in Darwin's Nightmare', [guardian.co.uk](http://www.guardian.co.uk). 17 August 2006. <http://www.guardian.co.uk/world/2006/aug/17/film.filmnews> (accessed December 17, 2009).

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- ²¹ For a summary of the responses see Maïke van Schwamen, 'Débat houleux autour d'un film saisissant', 21 April 2006. <http://www.arte.tv/fr/le-cauchemar-de-darwin/La-controverse-mediatique-/1184374.html> (accessed October 26, 2009).
- ²² Ulrich Beck, *Ecological Politics in an Age of Risk*, trans. Amos Weisz (Cambridge: Polity, 1995), p. 147.
- ²³ Darin Kinsey, 'Nightmare or Delusion?' *Environmental History* vol. 12 (April 2007): pp. 322-324, 324.
- ²⁴ François Garçon, *Enquête sur le cauchemar de Darwin* (Paris : Flammarion, 2006).
- ²⁵ Kinsey, p. 324.
- ²⁶ Kinsey, pp. 323-324.
- ²⁷ François Garçon, 'Le cauchemar de Darwin : allégorie ou mystification ?' *Les Temps modernes*, November - January 2006: 353-379.
- ²⁸ Garçon, *Enquête*, p.15.
- ²⁹ 'Comme documentaire, *Le Cauchemar de Darwin* devenait ainsi un matériau que l'historien pouvait légitimement interroger comme n'importe quel document sur lequel s'élabore son travail, et en conséquence en vérifier les sources, authentifier les locuteurs, confronter les témoignages pour, au bout du compte, démêler le vrai du faux et apprécier de quoi relevait le propos: portrait approchant, voire fidèle, de la réalité tanzanienne ou affabulation?' Garçon, *Enquête*, p.15.
- ³⁰ Muriel Fitoussi, 'Le cauchemar de Garçon,' *Bakchich*, 5 May 2006. <http://www.bakchich.info/Le-cauchemar-de-Garçon,00018.html> (accessed November 20, 2011).
- ³¹ Zoe Lamazou, 'Cauchemar de Darwin : le Garçon paie l'addition', *Bakchich TV*, 10 April 2009. <http://www.bakchich.info/Cauchemar-de-Darwin-le-Garçon-paie,07346.html> (accessed November 20, 2011).
- ³² AFP, "' Le cauchemar de Darwin" : un historien condamné pour diffamation', *Le Monde.fr:Archive*. 24 February 2008. http://www.lemonde.fr/web/recherche_breve/1,13-0,37-1025731,0.html (accessed November 20, 2011).
- ³³ Cour d'appel de Paris, 11e chambre, 11 mars 2009 cited in http://fr.wikipedia.org/wiki/Le_Cauchemar_de_Darwin (accessed December 22, 2011). I have not been able to gain access to the law report itself.
- ³⁴ Judgement of the court of appeal Paris.
- ³⁵ Arno Russegger, 'Configurations of the authentic in Hubert Sauper's Darwin's Nightmare', in Robert von Dassanowsky and Oliver C. Speck (eds), *New Austrian Film* (New York, Oxford: Berghahn, 2011), pp. 343-355.
- ³⁶ Russegger p.348.
- ³⁷ Russegger p. 353.
- ³⁸ Russegger p. 354.
- ³⁹ Sperber et al, 'Epistemic Vigilance', p. 374.
- ⁴⁰ Grodal, *Embodied Visions*.
- ⁴¹ Sperber et al, 'Epistemic Vigilance', p. 376
- ⁴² Frederic Giraut, 'Revelations et impasses d'une approche radicale de la mondialisation', 8 July 2007. <http://espacetemps.net/document2712.html> (accessed December 21, 2008).

⁴³ 'son apport essentiel est certainement la démonstration de l'imbrication (ce qui ne veut pas dire lien de dépendance ou de causalité) d'une part des économies formelles (l'industrie de la transformation, la consultance internationale...) et informelles (le gardiennage, la pêche artisanale, la récupération et le traitement des restes après éfiletage...), et d'autre part des activités légales (commerce alimentaire transcontinental, transport aérien...) et illégales (trafic d'armes, prostitution...). On touche certainement là un des aspects les plus fondamentaux de la mondialisation appliquée au continent africain.'

⁴⁴ Sperber et al, 'Epistemic Vigilance', p. 376.

⁴⁵ Russegger, pp. 346-347.

⁴⁶ See L. Kaufman, 'Catastrophic change in species-rich freshwater ecosystems: the lessons of Lake Victoria', *Bioscience* vol. 42 no. 11 (1992), pp. 846-858.

⁴⁷ See Kim Geheb, Sarah Kalloch, Modesta Nyapendi Medard, Anne-Therese Carolyne Lwenya, and Mercy Kyangwa, 'Nile perch and the hungry of Lake Victoria: Gender, status and food in an East African fishery' *Food Policy* vol. 33 (2008), pp.85-98.

⁴⁸ Grimshaw, p. 254.

⁴⁹ Grimshaw, pp. 255-6.

⁵⁰ Grimshaw, pp. 254-5.

⁵¹ Brian Winston discusses the relationships between various institutions and evidence gathering in *Claiming the Real: the documentary film revisited* (London: bfi, 1995), pp. 138-147.

⁵² See Michael Renov, 'Toward a Poetics of Documentary', in Michael Renov (ed) *Theorizing Documentary*, (New York, London: Routledge, 1993), pp. 12-36. See also Bill Nichols, *Introduction to Documentary* (Bloomington: Indiana University Press, 2001).

⁵³ Dan Sperber, *Explaining culture: a naturalistic approach* (Oxford, Malden Massachusetts: Blackwell, 1996).

⁵⁴ Sperber, 'Metarepresentations', 123-126.

⁵⁵ Sperber et al, 'Epistemic Vigilance', 359.

⁵⁶ See Jeremy I M Carpendale and Ailidh B. Carpendale, 'The development of pointing: from personal directedness to interpersonal direction', *Human Development*, (2010), pp. 110-126.

⁵⁷ See Terrence Deacon, *The symbolic species: The co-evolution of language and the human brain* (London: Penguin, 1997).

⁵⁸ Jacques Rancière, *The politics of aesthetics: the distribution of the sensible*, translated by Gabriel Rockhill, (London, New York: Continuum, 2004).

⁵⁹ Hubert Sauper, 'Survival of the fittest?'

<http://www.darwinsnightmare.com/darwin/html/startset.htm> (accessed 4th January 2012).