Playing with paradigms - a role for humor

Pal Jewell[1]

Abstract

'Every joke is a tiny revolution', opined George Orwell. A significant function of humor appears to be that it facilitates revolutions in one's mind by presenting incongruous alternatives to challenge the assumptions that frame our encounters with the world. In his seminal work 'Fun in Games', Erving Goffman declared an interest in the rules that framed social encounters. Contemporaneously Thomas Kuhn, the notable historian of science, was working on 'The Structure of Scientific Revolutions', a book that radically challenged the conventional view of how science and scientists operate, replacing factual accumulation with paradigm shifts. Goffman and Kuhn each eschewed grand theory in favor of social structures, and in particular, what the members of a social group counted as relevant to the framing of their interactions. Combining their views on relevance leads to a suggestion that humor functions as a 'paradigm buster', by challenging the rules we use to frame our understanding of social and physical structures.

Key Words: sociology, science, Kuhn, Goffman, incongruity

Introduction

When Orwell wrote that every joke is a tiny revolution, he was primarily thinking of satire (Orwell 1945). While satire is useful when challenging the political status quo, this is but one example of the way humor can be used to challenge our assumptions. Assumptions themselves are useful, indeed, indispensable, in order for us to function in our daily lives. Sometimes, though,

---

[1] Dr. Paul Jewell Flinders University, Australia Paul.Jewell@flinders.edu.au

we need to alter or even discard assumptions. I argue that humor can function as a constant reminder of this (otherwise unpleasant) fact of life and provides us with a reward for entertaining alternative views. I begin by referring to two seminal works that examine how we structure our perceptions of the world. One is 'Fun in Games' by the sociologist Erving Goffman; the other is 'The Structure of Scientific Revolutions' by Thomas Kuhn. Goffman and Kuhn do not refer to each other's work, but I contend that their ideas, albeit in disparate fields, bear enlightening parallels that can be brought to bear on a perception of humor as a challenger to assumptions, frames and paradigms.

Fifty years ago the notable sociologist, Erving Goffman, published 'Fun in Games' in which he declared an interest in discussing what 'we could learn about the structure of focused gatherings' (Goffman 1961, p.19). He proposed that investigating the sorts of rules that governed how a game was played could lead to an understanding that there were rules that framed any social encounter.

At the same time that Goffman was investigating the structure of focused gatherings, Thomas Kuhn, the notable historian of science, was working on 'The Structure of Scientific Revolutions', a book that radically challenged the conventional view of how science and scientists operate. Rather than scientific knowledge being accumulated in progressive, incremental steps, he described how scientists operated within paradigms, and from time to time there were revolutionary paradigm shifts. A classic example is the shift from the earth-centered astronomy of Ptolemy to the heliocentric astronomy of Copernicus (Kuhn 1962, p.10). Kuhn's work caused considerable excitement amongst philosophers. It has significant implications for epistemology, rather than just the history and philosophy of science.

Goffman and Kuhn have each remained influential in the fifty years since. Goffman has been listed as one of the most frequently cited authors in the Humanities, with more citations than Weber or Freud. Kuhn was also listed, with more citations than Marx or Nietzsche (The Times 2009).

Goffman's work was in Sociology. Kuhn's was a history of physical sciences. Goffman does not cite Kuhn in 'Fun in Games' nor does Kuhn cite Goffman in 'The Structure of Scientific Revolutions'. Nonetheless, I will indicate parallels I see in the two contemporaneous works, and relate them to a theory of humor.

Goffman.

When in "Fun in Games" Goffman presents his analysis of the structure of focused gatherings, he begins by pointing out the crucial role of 'rules of irrelevance' (Goffman 1961:10). He starts with the assumption that any social 'encounter exhibits sanctioned orderliness arising from obligations fulfilled and expectations realized, and that therein lies its structure' but crucially, that 'order pertains largely to what shall be attended and disattended' (Goffman 1961, p.11). He gives the playing of a board game like draughts or chess as an example. A board game can be played with pieces that in reality are bottle tops on lino squares, gold figurines on marble or even uniformed people on flagstones. (Today we might add pixels on a screen.) Their physical attributes are irrelevant, and not attended to. The rules of irrelevance extend further and apply to the participants of the game as much as the equipment (Lloyd and Jewell 2014). So the board game 'may constitute orderly interaction that is officially independent of sex, age, language, socio-economic status...' (Goffman 1961, p.28). Goffman's analysis is compelling. If I sit down to a game of chess, whether it be with an intimate friend or a stranger, I expect the outcome to be determined entirely by the relative skill levels of my opponent and myself. If my opponent were wealthier than me, or physically stronger, I would not pay any regard to that and indeed, if it were suggested those characteristics be taken into account, the rules of the game would be violated and I would not play. The structure of the encounter would be destroyed, as would the encounter itself.

So the players of a board game sit within a membrane that screens off from the players any properties that are irrelevant, including the features, properties and characteristics of each other. Only certain properties make it through the screen.

Goffman then goes on to point out that the presence of such a membrane is actually true of any social encounter.

> 'I have argued in this paper that any social encounter, any focused gathering, is to be understood in the first instance, in terms of the functioning of the 'membrane' that encloses it, cutting it off from a field of properties that could be given weight. There is a set of transformation rules that officially lays down what sort of properties are to be given what kind of influence...' (Goffman 1961, p.71).

Goffman had an inkling that this analysis might somehow be related to humor. He concludes the article with,

> 'As every psychotic and comic ought to know, any accurately improper move can poke through the thin sleeve or immediate reality' (Goffman 1961, p.72).

In summary, any social encounter is structured by a set of rules. The rules include what is to be counted as relevant and what is to be dismissed as irrelevant. Relevancy rules apply to characteristics of the people in the encounter and to features of the environment. Humor challenges the criterion of relevance and the structure of the encounter.

Kuhn

As mentioned above, while Erving Goffman was working on the structure of social encounters, Thomas Kuhn was working on the structure of scientific practice. His influential work 'The Structure of Scientific Revolutions' was first published in 1962. (A second edition in 1970 and a third in 1996 allowed him to engage in the debates he had initiated.)

Kuhn does not depict science as a depersonalized accumulation of objective facts. Rather, he describes it as a social activity amongst people who have common conceptions, who construct and share common models, who work within the same paradigms.

'The study of paradigms … is what mainly prepares the student for membership in the particular scientific community with which he will later practice' (Kuhn 1996, p.11).

Kuhn does not provide a succinct definition of a paradigm. One critic complained that he used the term in 22 different ways (Kuhn 1996, p.181) though Kuhn admits to only two (Kuhn 1996, p.182). Instead he provides numerous examples and descriptions of how paradigms work in practice. A classic example is Ptolemaic astronomy, which described the stars as tracing perfectly circular paths around the earth. A scientific revolution occurred when Ptolemy's paradigm was replaced with Copernican astronomy, which described the earth as revolving and itself tracing an orbit around the sun. Normally, according to Kuhn, a scientist works within an accepted paradigm, by which he means

'… to suggest that some accepted examples of actual scientific practice - examples which include law, theory, application and instrumentation together - provide models from which spring particular coherent traditions of scientific research' (Kuhn 1996, p.10).

These 'coherent traditions' lead to practices that, I argue, bear a significant resemblance to Goffman's description of people's behavior in games and social encounters. Goffman maintains that there are frames that structure the way people relate to each other, and what they select as relevant to the encounter. Kuhn maintains there are paradigms that structure the way scientists see the world and what they select as relevant to their research. With regard to relevance, he says that

'No natural history can be interpreted in the absence of at least some implicit body of intertwined theoretical and methodological belief that permits selection, evaluation and criticism' (Kuhn 1996, p.11).
With regard to conventions structuring the way one sees the world, he says,

'Returning now to exemplars and rules, what I have been trying to suggest, in however preliminary a fashion, is this. One of the fundamental techniques by which the members of a group, whether an entire culture or a specialists' sub-community within it, learn to see the same things when

confronted with the same stimuli is by being shown examples of situations that their predecessors in the group have already learned to see as like each other and so different from other sorts of situations.... They may be presentations of the members of natural families, say of swans on the one hand and geese on the other' (Kuhn 1996, p.11).

Humor playing with paradigms

Consider the following joke.

The young prince was in excellent spirits. The kingdom was prosperous. His father, the king, was a popular and competent ruler, but was nearing the end of his reign and the prince would soon assume the throne. As the prince rode on parade through the town, the peasants lined the streets cheering and waving. The prince noticed amongst them a young man who looked remarkably like himself "Father, you old philanderer!" thought the prince as he approached the young man in the crowd, "Tell me fellow, did your mother ever work at the palace?"

"No," replied the peasant, "but my father did" (Trad).

This classic joke exhibits standard features of its genre. It is a cautionary tale. It has a punch line that is unexpected but logical. It is revolutionary in that it brings down the mighty, thereby providing us commoners with delicious schadenfreude. It nicely fulfills the function identified by Carr and Greeves. 'Joke telling can betray a human need to feel included and accepted in a social group, while uncovering at the same time our love of the shocking and the subversive' (Carr & Greeves 2007, p.7).

Having noted the classic features of the joke, we can also apply analyses using insights from Goffman and Kuhn.

Goffman might draw to our attention that there are numerous characteristics of the prince that have been screened out of this joke. We are told that he is

currently cheerful, because that is relevant to the structure of the joke, but we do not know his usual demeanor, nor his habits, his virtues, his hobbies or his skills. These characteristics are presumably relevant to his suitability as a monarch, but not relevant to the point of the joke. There is only one characteristic that is relevant to the social encounter between the prince and the peasant. The prince is the son of the king. The point of the joke is to challenge that fundamental structural component of the encounter.

Kuhn might point out that when the punch line registers with the recipient of the joke, the recipient experiences a paradigm shift. There is a revolution in the way the elements of the story - prince, peasant, father, mother - are arranged. The revolution is akin to the shift from Ptolemy to Copernicus. Suddenly, the prince is no longer the center of power. Now he is just another asteroid.

 et al (2011, p.7) distinguishes "real-world" humor from comedy. It is worth noting that neither the humor nor the mind shift need be a function of communication (Sperber & Wilson 1986). It is not the teller of the joke that is fomenting the revolution. It is the humor itself. If you were a peasant in the crowd yourself, you might notice the young man's resemblance to the prince and wonder if his mother had ever worked at the palace. Then you might recall that his father had and chortle at your sudden realization of what that implied about the prince's parentage.

Is this what humor is for? Does the challenge to paradigmatic thinking and social conventions explain what humor does and how it works?

Extending Goffman's and Kuhn's analyses

Goffman provides an analysis of games in which he points out that the players select characteristics of each other and of the environment in which they are playing, and apply conventions to decide what is relevant and should be attended to, and what should be screened out. This process results in a structure that defines the game and makes the playing of it possible. He extends this idea to social encounters, which are also structured by convention and have rules that

determine what is relevant and what is not. But why stop there? Is this process not true of the way people engage with all of their environment? Do we not continuously select what to pay attention to, whether we are conversing with another, driving on the road, writing an article, trekking in the jungle or solving a scientific problem?

Kuhn's insight can be similarly extended. He argues that scientists select and evaluate data according to conventions that thereby structure the process. But again, why stop there? Do we not all construct mental models that enable us to order and deal with our experiences? Is not every person's engagement with the world structured by paying attention to some parts of it, treating other parts as irrelevant and making connections? Is not all thinking paradigmatic?

Humor challenging assumptions

Kuhn and Goffman examined the ways that humans coped with understanding their surroundings. Kuhn looked at the material world and how we have constructed scientific methods for categorizing, explaining and intervening in the physical domain. Goffman provided insights on how we manage the social domain, on how we understand, order and conduct our social encounters. Both domains present us with a formidable challenge. They each present a dauntingly vast amount of information for us to deal with.

The scientific method is a standard way of dealing with the complexities of the material domain. The method requires us to collect the data, form a hypothesis, design and conduct an experiment and compare the results to the hypothesis. Of course, all humans deal with the material world, not just scientists, just as we all have social encounters, not just those of us who are sociologists.

You do not need to wear a white coat to use the scientific method. Indeed, for our current purposes it might be useful to imagine a scenario set long before the invention of what we now call science.

Imagine a prehistoric person, a cave woman, say, sitting on the banks of a river and idly gazing at the water. A recent storm has deposited in the stream some twigs that are floating by, twisting in the current, sometimes submerging in rapids but invariably popping up to the surface in calmer waters. The cave woman, as so many of us would do in similar circumstances, picks up a nearby piece of wood and tosses it into the river. She notices that it too floats. Wondering whether all wood floats, she seeks out some other pieces, large and small, dead wood and recently broken, and tosses them in too. Before long, she and her mate have constructed a raft to take them across to the other side of the river where food is more plentiful.

She has successfully applied the scientific method. She made observations and gathered data, by watching the twigs float by. She formed a hypothesis, that wood floats. She designed an experiment to test the hypothesis, by resolving to toss wood into the water. She conducted the experiment, by tossing twigs and branches into the stream. She noted the results. All the wood she threw in the stream floated, so confirming her hypothesis that wood floats.

She even applied her theoretical discovery to practical purpose. She got out of her laboratory, so to speak, got her hands dirty and built a raft, thus improving the circumstances of herself and her community.

So the scientific method is simple, objective, effective and available to all. Splendid. Unfortunately it is not as simple as it first appears. The first step is to collect the data. Hold it right there. We can't collect *all* the data. Certainly our energetic cave woman collected as many different bits of wood as she could in a reasonable time frame, but there was always more. More to the point, though, why did she collect wood? Why not, say, brown things? Or round things? Not only was there an unlimited amount of wood lying around, there was an unlimited number of all sorts of things, things that she had already catalogued in her mind by some unacknowledged scheme that allowed her to select some things as relevant and ignore others.

So instead of collecting information and then forming a theory based on that, it seems we have to have a theory before we can decide which bits of information to collect. Which information we choose to select and look at depends on a pre-judgment, a prejudice, in other words. We are accustomed to the word 'prejudice' being synonymous with intolerant, narrow-minded and biased, but it appears, paradoxically, to be a necessary condition for scientific, objective and effective thought. Kuhn pointed out that all scientific endeavors were organized through paradigms. Although he did not provide a clear definition of paradigm, it is apparent that it is an intellectual construction, a key function of which is to provide criteria of relevance. It provides us with guidance on how to select pieces of information and how to relate them to one another.

While this process is necessary, it has its dangers. An accepted paradigm (such as Earth centered astronomy) can be wrong, as Kuhn, and Koestler before him, have recounted (Koestler 1959). Humans are naturally and understandably unwilling to discard their world views, paradigms and prejudices. We need them to cope with life's complexities. But a person or a species that is too inflexible will not survive.

Humor keeps us flexible. Every time we encounter it, we are reminded that there are other ways of looking at things. Furthermore, laughter is a pleasant sensation, which compensates for the discomfort associated with challenging the rigidity of our world views. Humor presents alternatives to the status quo. The alternatives do not have to be plausible, or sensible, or practical. They just have to be alternatives, and presented in a way that is fun.

The challenges we face in the social world are similar. When we manage a social encounter, there is a vast amount of data about the other people that may or may not be relevant. I treat women differently from men in some social circumstances but identically in other circumstances. When should I make allowances for your physical size, strength or appearance, what expectations should I have of your ethnicity, what deference is due to your power or authority, what were you like when I met you last week and what sort of mood are you in today?

I have been trained from infancy how to manage this challenge. Cultural conventions provide me with instructions on how to treat people of different gender, what to expect of people according to their appearance, to whom to defer and whom to belittle. The conventions that my culture have drummed into me are essential in my social life, but it is also true that many of them are wrong. Some rest on unjustifiable stereotypes and some on etiquette that was acceptable in the past but that has been abandoned as times have changed.

As we nervously negotiate the treacherous currents of our social relations, humor can aid in two ways. Firstly, it can do a similar job that it does in the material domain. It can remind us that there are alternative constructions. When we are peasants in the crowd, we can say, "Hang on a minute! Should we really be deferring to this bloke on a horse? What makes him a prince, anyway?" Secondly, we can use humor during our social encounters to remind each other not to be too rigid, not to take offence and to leaven our conversations with light-hearted fun.

Dealing with the Unexpected

We cannot make our way in the world without structuring our experiences. On the other hand, there are dangers in structures that are too rigid. We need to keep an open mind and not screen out information that is actually relevant. In addition, we need to be flexible enough to deal with the unexpected. According to Information Theory, information is unexpected by definition. Gleick points out that when information is encoded in the English language, the letter q is always followed by u. The u provides no additional information (Gleick 2011). If information challenges our paradigms, we need to be prepared to change them. Perhaps a small accommodation needs to be made, or perhaps a Copernican revolution.

Humans therefore face a continuous dilemma. On the one hand we want the world to be predictable. If we cannot predict events, we cannot control them. So we order our experiences of events, detect patterns and construct models. On the

other hand, we need to be able to deal with the unexpected, question our models and re-arrange our assumptions.

Is this the function of humor? Using abductive reasoning (Harman 1965, Lipton 2004) might suggest that humor rehearses in our minds the process of re-arranging our mental models (at least humor that is based on incongruity). It does so in a way that is less threatening than being plunged into actual chaos would be. This suggestion is compatible with other proposed explanations, such as the 'false alarm' theory and the 'benign violation' theory (Ramachandran 1998, McGraw 2010).

Humor is enjoyable, as is a moderate amount of unexpectedness. People enjoy going on holiday. If life is too predictable, it is boring. A life that is utterly predictable is worse, because it allows for no decisions, no interventions, no changes for the better. A life that is too unpredictable induces anxiety at best and probably psychological paralysis (Volensky 2000).

Humans require a certain amount of orderliness and predictability. Accordingly, they identify and impose structures on the world. They need, too, the ability to deal with challenges to these structures. The pun, the banana skin induced pratfall, the long and involved shaggy dog story, the literary comedy of manners, all provide safe and enjoyable challenges to our structured ways of thinking about the world.

Rather than explaining humor as depictions of incongruity or as release of tension, or as recognition of superiority, I propose that it is a means of playing with the unexpected.

An objection from the superiority theory of humor
If, with due respect to the laws of induction, I seek exceptions to this proposal, I immediately notice a worrying flaw in the theory. The proposal that humor functions as a challenger to rigid social structures relies upon the incongruity theory of humor. It does not, however, account for the superiority theory. Plato,

not the jolliest of social engineers, thought it perfectly fine to laugh at the misfortunes of one's enemies (Plato 1860 originally circa 400 BC). Hobbes thought that the whole point of humor was that it made one feel good about oneself in comparison to one's flawed inferiors (Hobbes 1994 originally 1651). Surely, the notable thing about ethnic jokes is that they reinforce prejudices rather than challenge them. There are numerous jokes that rely on unquestioned stereotypes such as the irrationality of the Irish and the perversity of the Poles (Davies 1997), to which we can add the cupidity of lawyers and the stupidity of blondes. It was ever thus. There are ethnic jokes in the two thousand year old Ancient Greek collection Philogelos (Baldwin 1983, Beard 2009). Ethnic jokes seem to support pre-existing assumptions and prejudices. How can humor, in theory, function sometimes to support the status quo and at other times to challenge it?

Problems with the superiority theory

It should be noted, though, that using these examples to confirm the superiority theory of humor has problems too. Do we really have a pressing psychological or political need to dominate blondes? They are neither neighbors nor immigrants. Further, while ethnic jokes are supposed to refer to characteristics of the culture being mocked, that supposition is belied by the portability of the same joke from Irish to Poles to denizens of Newfoundland (Davies 1982).

Another exception worth noting is that a stereotype is not necessarily one of inferiority.

An Irish builder, experiencing a recession in his home country, goes to England to seek work. He approaches the foreman of a building site and enquires about the opportunities for employment. The foreman wonders whether the Irishman is a skilled builder as he claims, or merely a laborer. To test him, the foreman says, "Do you know the difference between a joist and a girder?" The Irishman responds, "To be sure, I know that. Joyce wrote Ulysses and Goethe wrote Faust".

The sophisticated literary culture of the Irish is to be found even in their builders, providing us with an unexpected but pleasing punch line. Inferiority can be reversed in stereotypes other than ethnic, as in this mother-in-law joke.

The cave woman Ug

(not the scientifically competent cavewoman we introduced earlier in this paper) rushed up to her husband. "Og! Og" she cried in distress. "My mother has just gone into that cave where there is a vicious old sabre-tooth tiger." Og replies, "So? Who care what happens to a nasty old sabre-tooth?"

This joke has been criticized as a standard put-down of mothers-in-law (Shade 2010), but of the four characters in the story, clearly Ug's mother is the superior.

There is, though, no getting away from the fact that humor can be used by people in dominant positions to mock those they consider to be their inferiors.

No Grand Unifying Theory

There are competing theories of humor, with contemporary scholars continuing to propose new ones (Ramachandran 1998, McGraw 2010, Hurley et al 2011, Sover 2013). It is therefore prudent to be cautious in accepting or advancing claims that a grand unifying theory has been developed at last. On the other hand (the hand holding Occam's razor), it seems implausible that jokes challenging paradigms and jokes affirming superiority have two distinct causes and mechanisms. Hurley et al (2011, p. 287) suggest that competing humor theorists are like the blind man and the elephant. Each can describe the bit of the beast that is within their grasp, but none can grasp or understand the whole. The fable is beguiling, but it does not propose a solution. The humor function I have derived from Goffman and Kuhn does not comfortably cover all cases, particularly examples of superiority humor. Even the persuasive and well regarded incongruity theory struggles. And yet, it seems implausible that humor has a number of causes, mechanisms and functions, rather than one foundational explanation. The nature of that single, unifying explanation remains tantalizingly just beyond our reach.

Conclusion

It is indisputable that a major and frequent use of humor is to critique our assumptions. There are innumerable examples of satire, parody and unexpected punch lines to confirm that. I have proposed that by comparing the works of Goffman and Kuhn we can advance towards an understanding of why we need to construct stable views of the world but also why we need to challenge our views. It seems significant that humor provides a pleasant way of challenging assumptions, which otherwise would be an uncomfortable experience. I argue that by playing with paradigms, or playing with frames, humor fulfills a useful function in our engagement with the world and its complexities, both material and social. It provides us with pleasant reminders that while we need to structure our views of the physical and social environments, we should remain prepared to restructure.

References

Amir, L.B. 2014. Taking the History of Philosophy on Humor and Laughter Seriously. *Israeli Journal for Humor Research,* Issue 5, 43-87.

Baldwin, B. 1983. *The Philogelos or Laughter-Lover.* Amsterdam: J.C. Gieben.

Beard, M. 2009. What made the Greeks laugh? *The Times Literary Supplement* February 18, 2009.

Carr, J. and Greeves, L. 2007 *The Naked Jape* UK: Penguin.

Davies, C. 1982. Ethnic Jokes, Moral Values and Social Boundaries. *The British Journal of Sociology*, 33(3), 383-403.

Davies, C. 1997. *Ethnic Humor Around the World: A Comparative Analysis*. USA: Indiana University Press.

Gleick, J. 2011. *The Information – A History, a Theory, a Flood.* Pantheon: USA.

Goffman, E. 1961 *Encounters: Two Studies in the Sociology of Interaction*. Indianapolis: Bobbs-Merrill.

Harman, G. 1965. The Inference to the Best Explanation. *The Philosophical Review* Vol. 74, issue 1.

Hobbes, T. 1994. Originally 1651, *Leviathan* London: Dent.

Hurley, M., Dennett, D. and Adams, R. 2011. *Inside Jokes: using humor to reverse-engineer the mind.* USA: MIT.

Koestler, A. 1959. *The Sleepwalkers: A History of Man's Changing Vision of the Universe.* USA: Macmillan.

Kuhn, T. 1996. *The Structure of Scientific Revolutions.* University of Chicago Press.

Lipton, P. 2004. *Inference to the Best Expanation.* Routledge USA.

Lloyd, M and Jewell, P. 2014. 'Fun in Games': Employing insights from Goffman's Sociology to an Understanding of Humor. *Israeli Journal of Humor Research - An International Journal.* Issue 5, 26-42.

McGraw A.P. & Warren C. 2010. Benign Violations : Making Immoral Behavior Funny. *Psychological Science*, 21(8), 1141-1149.

Orwell, G. 1945. 'Funny, but not Vulgar.' *Leader* 28.

Plato (circa 400 BC) *Philebus* in Poste, E. Philebus of Plato, 1860. UK: Oxford University Press.

Ramachandran V.S. 1998. The neurology and evolution of humor, laughter, and smiling: the false alarm theory. *Medical Hypotheses*, 51, 351-354.

Shade, R. 2010. Take my mother-in-law: 'old bags', comedy and the sociocultural construction of the older woman. *Comedy Studies*, 1(1), 71-78.

Sover, A. 2013. Time Limitation Theory (TLT) as the Basis for Humor Creation. *Israeli Journal for Humor Research* December 2013, Issue 4, 8-21.

Sperber, D and Wilson, D. 1986 *Relevance Communication and Cognition*. Oxford: Basil Blackwell.

The Times 2009 Most cited authors of books in the humanities, 2007 http://www.timeshighereducation.co.uk/story.asp?storyCode=405956&sectioncode=26 accessed 13.9.11.

Volensky, M., Lejeuz, C.W., Eiffert, G.H 2000 Prediction and Control: operational definitions for the experimental analysis of anxiety. *Behaviour Research and Therapy* 38(7), 653-663.