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Cognitive film theory: A personal status

– Interview with Professor Ed Tan

Edited by Andreas Gregersen and Birger Langkjær

Ed S. Tan is currently (2016-21) affiliate professor at the Department of Media, Cognition and Communication at University of Copenhagen and honorary professor of the Amsterdam School of Communication Research (ASCoR). Originally trained in psychology, he quickly moved into film, media, and communications studies. He is widely known as a central figure in the 'second wave' of cognitive film studies, which focuses on the interplay between cognition and emotion. His 1994 book *Emotion and the Structure of Narrative Film: Film as an Emotion Machine* placed emotions – triggered by the careful design of movies – as the driver of film viewing and engagement, and he has consistently argued that 'interest' is the central emotion. His work is wide ranging and equally theoretical and empirical: He has written about the fundamental connections between play, fiction, and emotion and has shown how changes in movement parameters by the simplest of figures is sufficient to trigger specific genre recognitions in test subjects. At present, he has a special research interest in the social nature of media perception.

In the spring of 2017, Associate Professor Birger Langkjær and Associate Professor Andreas Gregersen, both at University of Copenhagen, wrote a series of questions for Ed Tan. What follows is the result of this exchange.

Getting into the field

Interviewers: First of all, tell us a bit about how you got into research in the first place. How did you find your way into film, media, and communication studies?

Ed Tan: My hobbies and a lot of luck…

I was studying psychology in the late 1970s and wanted to go into scientific research from my first year on when I became a research assistant in the psychophysiology lab. I was also a Hollywood film fan. I was happy to find the theatre department (Humanities!) was looking for a quantitative data analyst. My supervisor had decided to investigate audience response and reception processes using social science methodology. For my part, I fell in love with their university theatre that we used as a living lab. Later on, the department set up a track in film and television studies, and I was able to help set it up. To my amazement, the moment was perfect. The current large department of media and culture studies grew out from this track. I taught film theory and analysis, and in my courses combined it with reception psychology and media and communication research – I had a minor in communication science. While I had a chair in comparative arts, I was able to continue my research on emotion in film audiences, questions like "Can we predict when people start crying, and do they feel real sadness, or do they just imagine they have an emotion?" It was pure luck that this research attracted interest in the academic world, and so it happened that I got a good job in communication science in Amsterdam.

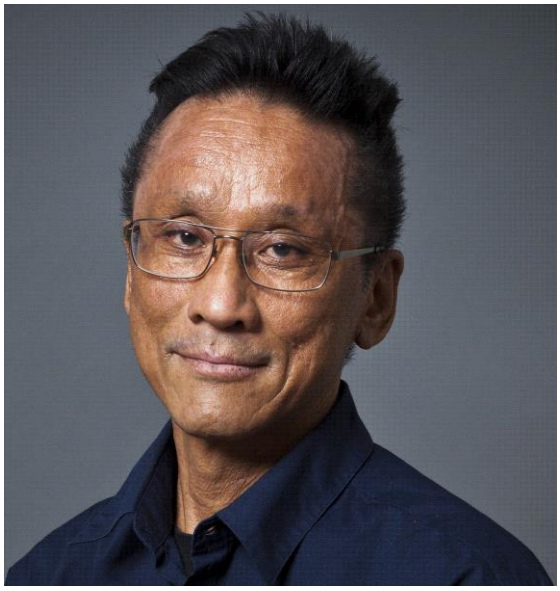
Interviewers: You studied with Nico Frijda, the Dutch psychologist. Could you briefly outline what you think are the most important things in his approach to cognition and emotion?

Ed Tan: Nico Frijda proposed that we see emotion as an indispensable aspect of our interaction with the world, i.e. things, situations, and people around us. Emotions are functional in the relations we have with all these aspects of our environment. Anger, for example, is for acutely restoring or ending a relationship that harms us. Emotions signal what really matters to us in specific situations, and they tell us what to do or not to do. An insult makes me aware of my own self-respect and the fact that you are willfully undermining it, and I will typically desire to make you stop it in one way or another. Basically, emotions are for action. Different emotions have their own specific 'diagnoses' of situations, or cognitive *appraisals*, associated with a readiness for action like fight, flight, avoidance, freeze, rumination, intake, being with, identification, distance, and so on. Not every emotion has a fixed action tendency to it though. In other words, there are many more emotions than the five or so basic ones typically proposed by some emotion theorists.

Cognition is part of emotion: Appraisals result from cognitive processing, and action readiness is followed by implementation of plans and behavior that require additional cognitive resources. Cognition is also subject to affect: Emotional action tendencies can have control precedence. My urge to hit you because of the insult may outweigh cognitive regulations (He isn't all that bad, he's much stronger than I am, etc.).

Emotion machines

Interviewers: Your book Emotion and the Structure of Narrative Film *was part of the second wave of writing in cognitive film theory, where the interest seemed to shift from an analysis of narrative structure to analysis of viewer emotions (another work from this phase was Torben Grodal's* Moving Pictures*). Without giving too much away, what are the key ideas in your book?*



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Ed Tan: Mainstream narrative films are emotion machines in that they continuously deliver the right emotional stimuli. First, they create interest or curiosity, i.e. an emotional urge to continue watching. Second, they deliver events that provoke maximum intensities of genre-specific emotions, e.g. awe, sadness, mirth, fear, and horror. Interest is controlled by the plot, segmentation, and 'dosage' of information (cf. Bordwell's and Sternberg's narrative procedures surprise, suspense, and curiosity). Genre-specific emotions are created by use of style and technology to profile the presentation of an event (say, an accident) in such a way that it may be appraised as comic (absurd implementation), tragic (implemented as resulting from misunderstanding or ironic twist), immoral (emphasizing evil intention or murder), horrific (zooming in on bloody or disgusting details), etc.

Torben Grodal's *Moving Pictures* gives an in-depth account of the genre-specific emotions. His second book *Embodied Visions* details the brain circuits that are responsible for the genre-specific emotions. Cognitive stereotyped schemas of generic events are indispensable in the appraisal of genre-characteristic events. Viewers also have aesthetic emotions, which have the film as a productional artefact as their object instead of events in a fictional world. These *artefact emotions* result from appraisals of filmmaker intentions and performance (e.g. admiration or contempt for the filmmaker), of the composition and stylization of the film (love of plot, gags, SFX, punchlines, acting, motives, etc.). If you know the preferences, tastes, and viewing history of viewers, you may be able to predict both their F(ictional world) and A(rtefact) emotions for a given film.

Interviewers: Have you changed your mind about anything during your career as a researcher?

Ed Tan: First, when I worked on emotion in film viewers, I initially thought that images and sounds were the strongest emotion stimuli. Because I taught film analysis, I came to see how narrative controls emotional engagement and response, and now I am convinced that high-level cues (narrative expectations) and low-level cues (image and sound features) work in perfect tandem to provoke strong emotion.

Second, during my career I have seen the potential of lab environments for measuring emotion grow: Rating scales can be computerized and taken online, behavior and psychophysiological registration including eye-tracking and facial expression monitoring is simpler, we can use fMRI [i.e. functional magnetic resonance imaging] to scan the whole brain. But in the end, we need to explain the experiences that film viewers have, and these are not directly derivable from measurable responses. Good descriptions of experiences are necessary, descriptions that tell *what it is like* to watch a movie and have emotions. In other words, we need to add phenomenological meaning to psychological processes. That is quite a challenge!

Third, and related to the previous points, back when I was introduced to experimental cognitive and social psychology, these disciplines were based on a quite limited model of human consciousness. To use a rather horrific metaphor: In retrospect, we were satisfied if we could link the measured

processes and responses going on in a brain kept alive and functioning in a chemical solution with input from film stimuli directly presented to the optic and auditory nerves. This 'brain in a vat' model was pretty much how we looked at film and the emotional responses! I am happy to say that this is a far cry from contemporary experimental psychology. First, cognition and consciousness are seen as *situated* – specific constellations of the world contextualize our experiences. Second, the whole organism is considered, in that cognition is seen as *embodied*: Minds are not reducible to brains; they include bodies and extend into the world. Third and most importantly, the life sciences and then psychology have 'discovered' that we are a fundamentally *social* species. Individuals' behaviour, cognition, perception, and emotion serve social coherence, exchange, and collaboration. The film experience revolves around participating in socially and culturally shared meanings and practices. As a researcher, I am intrigued by possible synchronization of brain activity across individual viewers. In his neuroscientific research on film viewing, Uri Hasson has shown how high the correspondences can be in responses among audience members. Are these correspondences indicative of shared perceptions? And how do individual viewers share their experiences with others in a cinema and later, in exchanges with friends or using social media? Do individual memories converge in a collective story about each film?

Sources of inspiration

Interviewers: Is there a piece of research by some other researcher that you have found particularly important?

Ed Tan: Nico Frijda's work and his openness and curiosity. He has taught us what it means to be feeling beings and the endless richness of emotional experience. He was a great theoretician and observer. He told me one day that, in a meeting, people had been upset and angry at a male student because this student was wearing an earring. He kept thinking about this for days, considering many possible psychological, biological, and philosophical explanations. Frijda loved the arts and was especially fascinated by the paradoxes of aesthetic emotion. Why do many people cry when seeing a bride in white, and others have goosebumps or a lump in their throat? What is the object of aesthetic emotion, and what emotional concern is at stake?

Frans de Waal from Emory (and the Netherlands) taught me about people's incredible undervaluation of animals' feelings, (social) intelligence, and consciousness. He presents fascinating observations, for example how a horse can seemingly perform flawlessly if you ask it to do mathematical calculation – simply by watching the quizmaster's unconscious bodily expressions. The way animals are regarded as automata reminds me of how humans were and are still dealt with as stimulus-response machines by behaviourist psychology. The behaviourist perspective has dominated communication research since the 1940s, when the 'hypodermic needle' model was used to explain effects of media on 'the masses'. This modelled the audience as unthinking; lacking critical intelligence; passively ingesting what the press, TV, and film were telling or showing.

I also want to mention two prominent film psychologists. Julian Hochberg from Columbia University has demonstrated that the mind contributes a lot to the proper perception of movies. The contents of the 'retinal image' cannot explain why we see smooth motion and coherent scenes. He has shown that in some cases we see figures move when they are not moving, and the other way around, see static figures while they are actually in motion. And James Cutting, who is a perception psychologist at Cornell University, and whose work contrasts in interesting ways with that of Hochberg: Cutting works in the tradition of James J. Gibson, who showed that our senses are attuned to the laws of physics and especially optics. We can perceive and understand the world not because we use smart cognitive schemas and inferences but because we automatically pick up behaviorally relevant information from the world. Cutting has spent years identifying the stimuli *in* film that tell us directly what on screen is relevant for the film story. Filmmakers unknowingly comply with the physical, optical, and perceptual organization of scenes in the real world, and this is why audience members simply cannot miss what they should see and hear. Cutting has produced a large amount of very important work in this area, but just to give an example, I remember a fun article by him – from 1986 or so – where he demonstrated and explained, using optical calculation, why cinema patrons sitting in the front row and left-most or right-most aisle can easily follow a movie.

Intelligence for fiction

Interviewers: What do you find most important about your own contributions?

Ed Tan: My research, I hope, helps to discover more about our intelligence for fiction, an undervalued human capacity, as well as how film and game design relies on this intelligence. For example, I participated in research identifying film features that can tell viewers about the film genre they are watching by addressing tacit knowledge, i.e. knowledge viewers don't realize they have. I also like to help reveal positive experiences and effects of movies and games. For example, I like a study I did with students to demonstrate that viewers of *Dexter* love the series because they like the playful exercise of identifying with a serial killer, even if they are embarrassed by the moral objections that can be made to this eating of forbidden fruit – I think this is a nice example of intelligence for fiction! Related to this, I also hope I can contribute to an understanding of the richness of forms of empathy that film viewers can have. The *Dexter* study also illustrates my conjecture that interest and curiosity are *the* emotions in narrative film viewing and gaming. Other emotions such as horror, fear, sadness, and moral indignation, to name a few, are in a sense interchangeable and are built on top of interest. I am proud that I have measured interest and shown how interest is related to a film's scene structure and to viewers' empathetic emotions. Horror without a plot is awful, and so is sex without a meaningful story. I also like the work that a PhD student did with me on the use of popular drama and film in the construction of interethnic identities. We observed how young people from very different Asian countries living in the Netherlands use popular Korean comic soap operas to construct an Asian identity.

I hope that most of the work I just mentioned has stimulated thinking among researchers in psychology, cognitive sciences, and humanities, and that it can be used to evaluate our society of media and its effects. I hope that a better understanding of fiction and what people do with it will stimulate more balanced views of media violence; do away with excessive fears of harmful media effects; and remove resistance against the use of fiction in education, training, and therapy.

Empirical methodologies

Interviewers: What, in your mind, is the status of empirical studies within the humanities?

Ed Tan: I am really happy with the steady increase in empirical work over the past decades. I am sure that empirical approaches are now recognized at least as complementary to hermeneutic, philological, and critical approaches. That said, I am happy to see that researchers in the humanities who like to do empirical work have become more interested in theoretical issues as well. However, many important types of empirical research are still often unaffordable for humanities departments. You basically need some budget to access data, and my impression is that budgets are being cut everywhere. At the same time, the requirements for proper data collection have become stricter. This is in many ways a good thing, but to be publishable, you need more controls, larger datasets, and in some cases more expensive technologies. This, in turn, means that we need to attract methodological expertise to the faculty, available not only to externally funded projects or to the few groups traditionally working with labs but to all researchers and students in the humanities. I am a great fan of the digital humanities.

Interviewers: Could you say a bit more about the relationship between theory and method?

Ed Tan: I am very much in favour of theory-inspired empirical research. I believe that academic scientific research is useful for the piecemeal development of theories, supported by empirical data. Every theoretical claim needs a variety of empirical tests because evidence must be cumulative. The failure to replicate findings in social psychology – as well as in other fields – is just a reminder of what we have always known: You need to test your hypotheses many times, not just once. And completely data-driven empirical research, for instance a one-off survey just to poll opinions about our government on 24 November 2017, has the value of delivering a possibly interesting snapshot, nothing more. Now that huge amounts of data are becoming available through social networks, wearable technology, and many other registrations of interactions, we can develop theories after the fact of data collection. But we need to develop new methodologies for extracting meaningful patterns, and we need formal approaches for building models

and theories on the basis of such reliable data patterns. So, the future of top-down, hypothesis-driven, *and* bottom-up data-driven research has already begun!

Interviewers: Could you elaborate a bit on the relationship between method and interpretation?

Ed Tan: When you use statistical methods, the room for interpreting your outcomes is limited. However, we tend to overlook that it is not absent – there is *some* room. When a hypothesis does not receive support from statistical tests, there can be theoretical reasons or considerations for the applied research designs and instruments that justify another chance for the hypothesis. Also, many exploratory procedures, such as clustering techniques, leave the initiative to the researcher for delimiting the number of clusters or dimensions and for assigning meaningful qualitative labels to both.

By the same token, qualitative interpretations can usually be followed by quantitative analysis. For example, the identification of a variety of practices in singer-songwriter fandom can stimulate the development of quantitative surveys that help project every fan or singer into a quantitative space with two or three practice dimensions. Finally, qualitative approaches are geared towards open interpretations. This is usually done in cycles, ending in convergence and a manageable set of categories.

Interviewers: How do you see the relationship between the humanities and other sciences, for example the social and natural sciences?

Ed Tan: Now you are inquiring into my credentials or even creeds. Well, here you are: I believe that successful cultural manifestations such as popular or respected arts and media can be seen as the result of cultural selection processes, just as surviving and thriving individuals can be regarded as results of natural (biological) selection processes. Biology now includes cultural studies, and vice versa. Social and cultural research needs to address the issue of why certain cultural forms are being handed down from one generation to the next and what aspects of an artform have developed across generations of users.

Future research

Interviewers: What do you consider the most important issues within the study of film, media, and communication today?

Ed Tan: I think we should pursue answers to the following broad research questions:

1. Which films, productions, and message types are the most popular among different people? Why?

By 'different people', I mean the typical socio-demographic variables used in social research. The why-dimension concerns typical experiences, uses, and gratifications as well as structural and functional composition.

2. The same questions as above, but replace the words 'popular' with 'respected'. The first set of questions investigates people's loving and liking, whereas the second investigates questions of social and cultural value or prestige.

3. How are traditional functions of face-to-face interpersonal communication (e.g. storytelling, persuasion, informing, ritual, problem solving) implemented in or recognizable in mediated communication, from print to film, TV to VR?

4. Related to the above, how can we design new media solutions for these functions? Among new media solutions, I would perhaps include AI and enhanced reality support.

Interviewers: Thanks. That gives us something to work on over the next couple of years. One final bonus question: Most cognitive theorists of film and media have denounced Freud, who used to have a strong position in the humanities. Will the repressed master thinker return at some point? Are there still lessons to learn from Freud?

Ed Tan: Current theorists of film and media seem to follow a behaviourist social science that has become obsolete. I am sure that a host of current research in psychology is on implicit, automated cognition surpassing and defying rational understanding. The summary of human condition is this: We act and feel first, and then we think, just in order to find rationales – after the

fact and on strategic grounds. That looks like what the master taught about the Id and Ego functions. Nor should we forget how profoundly Darwinist Freud's thinking was. Sex and aggression are about survival, the former of the species, the latter of the individual. However, it looks as though consciousness and forms of consciousness are about to make a comeback in cognitive science. For example, interest in the phenomenology of empathy and of pretense is growing among cognitive scientists. I hope that this trend too will emerge in the humanities.

Suggestions for further reading

Rodriguez Hidalgo, C. T., Tan, E. S. H., & Verlegh, P. W. J. (2015). The social sharing of emotion (SSE) in online social networks: a case study in Live Journal. *Computers in Human Behavior*, 52, 364-372.

Tan, E. S. (1996). *Emotion and the Structure of Narrative Film. Film as an Emotion Machine*. Mahwah, N.J.: Lawrence Erlbaum Associates.

Tan, E. S. (2008). Entertainment is Emotion: The Functional Architecture of the Entertainment Experience. *Media Psychology, 11*(1), 28-51.

Visch, V. T., & Tan, E. S. (2009). Categorizing moving objects into film genres: The effect of animacy attribution, emotional response, and the deviation from non-fiction. *Cognition, 110*(2), 265-272.