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Computers Evaluating Screenplays?
Automatic Elicitation of Narrativity From Big Data

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Agenda:

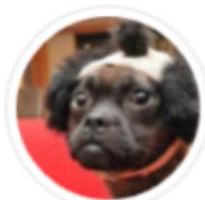1. Narrativity

2. Building narrativity from its elements

3. Text mining procedure

4. Results

5. Lessons learned and still to learn

Narrativity

A review of Mystery Adventures, a live action roleplaying game:

WhyWasteTimeW...
San Diego, California

Level 3 **Contributor**

11 reviews

13 helpful votes

"Great Fun..for a Puzzle Person"

⬤⬤⬤⬤⬤ Reviewed 29 May 2011

This is definitely an unusual thing to do in Las Vegas, but can be a wonderful change of pace. If you are into CSI and like solving mysteries, this is for you. If you'd rather just kick back and enjoy the show, this might be a bit much. Max seemed nervous at first with lots of 'uhhh's and ummmms, but warmed up quickly. The mystery started out slow..which might be natural, but picked up pace and excitement as the night went on. And it did go on...from 7pm to well past 10pm. Very exciting and worth the effort we put into it.

Visited May 2011

Helpful? 👍 2 Thank WhyWasteTimeWorking ⚑ Report

Ask WhyWasteTimeWorking about Mystery Adventures

This review is the subjective opinion of a TripAdvisor member and not of TripAdvisor LLC

Narrativity

Gap in narratological research; Stories in our research

Prior research solely provides a valid description of consumer narratives of (hedonic and utilitarian) material purchases.

"Material purchases are those made with the primary intention of acquiring a material good: a tangible object that is kept in one's possession"
(van Boven and Gilovich 2003, 1194)

Our research focuses on

❖ Experiential purchases
   "those made with the primary intention of acquiring a life experience: an event or series of events that one lives through"
   (van Boven and Gilovich 2003, 1194)

❖ Narrative elements
   which describe the experience consumed and recounted by the reviewer

Narrativity

Research objectives

1. Demonstrate reliable and valid automatic elicitation of narrative elements from big (textual) data

2. Extending the conceptual level of framework-building to the empirical level of stories as bodies of texts that can be measured systematically and quantitatively.

Building narrativity from its elements

1. **Narrative elements of identifiable characters**

a) Landscapes of affective and
b) cognitive consciousness

Definition: The extent to which the consumer story recounts an initial event about which a character expresses feelings or thoughts that, in turn, lead to a course of action by a character (Bruner 1986).

Proposed effect: Consumers make more inferences and exert more effort to identify characters when a story has well-developed landscapes of consciousness (Feldman et al. 2014).

Building narrativity from its elements

2. **Narrative elements of imaginable plot**

a) Temporal embedding

Definition: The extent to which the consumer story is organized in a temporal sequence and provides causal links between the events that occur (Escalas 1998; Thompson 1997).
Proposed effect: Temporally embedded stories determine why consumers translate stories into transporting past-present-future narratives (Adaval, Isbell, and Wyer 2007; Adaval and Wyer 1998; Barthes 1975).

b) Spatial embedding

Definition: The extent to which the consumer story focuses on and explains particular events (Escalas and Bettman 2000).
Proposed effect: Especially transporting stories usually pay attention to setting the scene of the narrative world by repeatedly offering illustrations (Gerrig 1993).

c) Drama

Definition: The extent to which the canon is breached (Burke 1962).
Proposed effect: If consumers strive to understand and explain these breaches, they may experience narrative transportation because more effort leads to more narrative transportation (Nielsen and Escalas 2010).

Building narrativity from its elements

3. **Narrative elements of genre**

❖ Progressive genre
Definition: Events continuously improve for characters over the course of the storyline (Gergen and Gergen, 1988).

❖ Regressive genre
Definition: Events decline over the course of the storyline (Gergen and Gergen 1988).

❖ Stable genre
Definition: Events neither improve nor decline over the course of the storyline (Gergen and Gergen 1988).

❖ Comedy
Definition: Events start out favorable, deteriorate, and end on a positive note (Gergen and Gergen 1995).

❖ Tragedy
Definition: Events start out unfavorable, ameliorate, and end on a negative note (Freytag 1863/2003).

Proposed effect: Emotional story shapes that change over the course of a storyline are more engaging than those that do not alternate in sign (Vonnegut 2005).

Text mining procedure

Identifiable characters:
n-gram operationalisation, representative words, and words in dictionary entry

Elements	Operationalisation	Representative words	Words in dictionary entry
Landscape of affective consciousness	Number of trigrams: motion– affective process– motion divided by number of sentences in a review	arrive, car, go abandon, cried, happy	168 915
Landscape of cognitive consciousness	Number of trigrams: motion– insight– motion divided by number of sentences in a review	consider, know, think	195

Text mining procedure

Imaginable plot:
n-gram operationalisation, representative words, and words in dictionary entry

Elements	Operationalisation	Representative words	Words in dictionary entry
Temporal embedding	Presence of unigrams: time (1) causation (2) time and causation (3)	end, season, until because, effect, hence	239 108
Spatial embedding	Proportion of space unigrams to other words in a review	down, in, thin	220
Drama	Proportion of surprise unigrams to other words in a review	amazed, astonished, shocked, startled, stupefied	32

Text mining procedure

Genre:
***D*-gram operationalisation, representative words, and words in dictionary entry**

Elements	Operationalisation	Representative words	Words in dictionary entry
Genre	Emotional story shape: absolute difference of positive emotion unigram and negative emotion unigram	love, nice, sweet hurt, nasty, ugly	406 499
Progressive	Continuous increase of emotional story shape		
Regressive	Continuous decrease of emotional story shape		
Stable	Rate of change near zero for emotional story shape		
Comedy	Negative curvilinear degree of emotional story shape (i.e., u-shape)		
Tragedy	Positive curvilinear degree of emotional story shape (i.e., inverted u-shape)		

Results

The review of Mystery Adventures as an example

❖ **Landscape of (affective) consciousness**

(WhyWasteTimeWorking, TripAdvisor, 29 May 2011)

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Max seemed **nervous** at first with lots of 'uhhh's and ummmms, but **warmed** up quickly.

The mystery started out slow..which might be natural, but picked up pace and excitement as the night went on.

And it did go on...from 7pm to well past 10pm.

Very exciting and worth the effort we **put** into it.

Results

The review of Mystery Adventures as an example

❖ **Temporal embedding**

> (WhyWasteTimeWorking, TripAdvisor, 29 May 2011)
>
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Results

The review of Mystery Adventures as an example

❖ **Spatial embedding**

> (WhyWasteTimeWorking, TripAdvisor, 29 May 2011)
>
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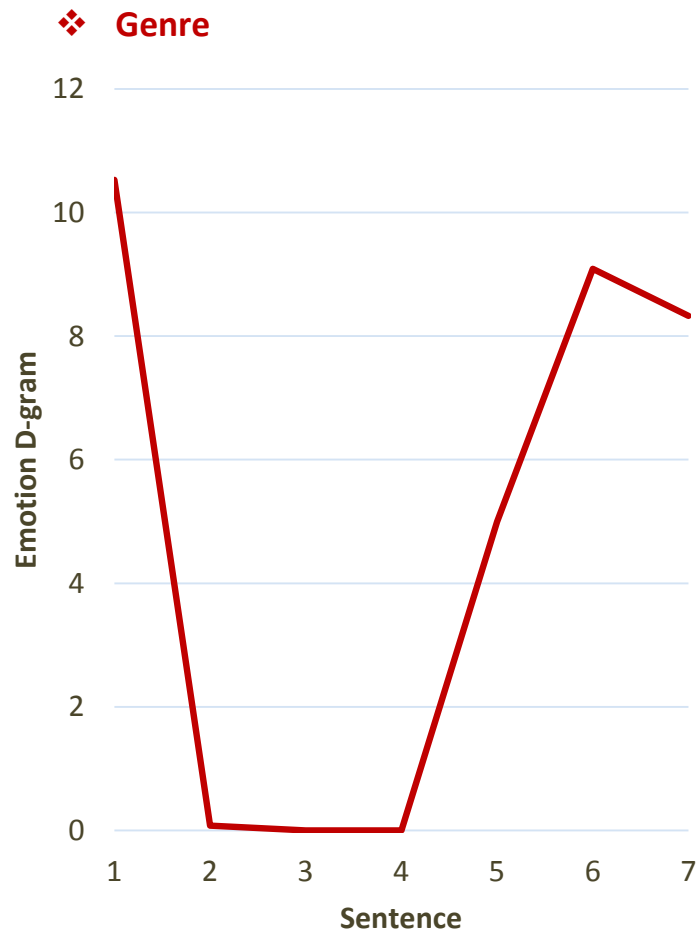> Max seemed nervous at first with lots of 'uhhh's and ummmms, but warmed up quickly.
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Results

The review of Mystery Adventures as an example

❖ **Genre**

Emotion D-gram vs Sentence (1–7), with values reaching ~10.5 at sentence 1, dropping near 0 for sentences 2–4, then rising to ~9 at sentence 6 and ~8.3 at sentence 7.

(WhyWasteTimeWorking, TripAdvisor, 29 May 2011)

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Lessons still to learn

Future research

We detect three trajectories for future research:

1. (Re-)defining narrativity: The preciseness of the story definition can be challenged. The increasingly popular flash fiction and the Twitter effect (Hennig-Thurau, Wiertz, and Feldhaus 2015) support the notion of very short stories.

2. Effects on conversion: Empirical work on the conversion effects of narratives is scant (van Laer et al. 2014). However, recent developments in digital libraries indicate that there is ample opportunity to investigate conversion as an additional consequence of narrativity (e.g., Google Books, the Internet Archive, and Project Gutenberg).

3. Effects on brand public: A line of research into possible brand public creation or strengthening as a consequence of consuming narratives, which violate economic principles, can be initiated (Arvidsson and Caliandro 2015, McQuarrie, McIntyre, and Shanmugam 2015).