Comets with Poisonous Tails, Risk Narratives and Comments Online

Abstract: The article compares the societal reflections of two comets: Lulin and Halley. The Lulin comet caused a wave of internet comments in 2009, and the Halley comet inspired panic and risk narratives in 1910. The narratives conform to G. Mairol's model of risk narratives. Estophone comments are inspired mostly by political banter, while Anglophone comments reflect fear (of the celestial body, among others). The hybridisation of culture and science has led to the situation where both the media and scientists' expert opinions have an influence on how the society perceives a comet.

Key words: Halley comet, internet comments, comet panic, Lulin [comet], end of the world, risk narratives

Today, comets are spotted long before they become visible to the naked eye or the amateur's telescope. About the time they become visible, media takes on the task of wringing news out of the celestial phenomenon. Practically every comet creates its own wave of doomsday and catastrophe omens. Due to the scarcity of written sources it is difficult to generalise whether what happened in the society after a comet appeared during the Middle Ages or even Early Modern Age was similar to more recent reactions. Incomplete records make it difficult to guess which ideas, fears and beliefs were activated by the appearing of a comet and how influential they were.

A unique opportunity for insight into ancient society is provided by the detailed drawings depicting the path of the comet and accounts of daily life and attitudes in the diary of the Japanese boy Matasaburou from the 1660s (cf Kõiva 2007; Ren-

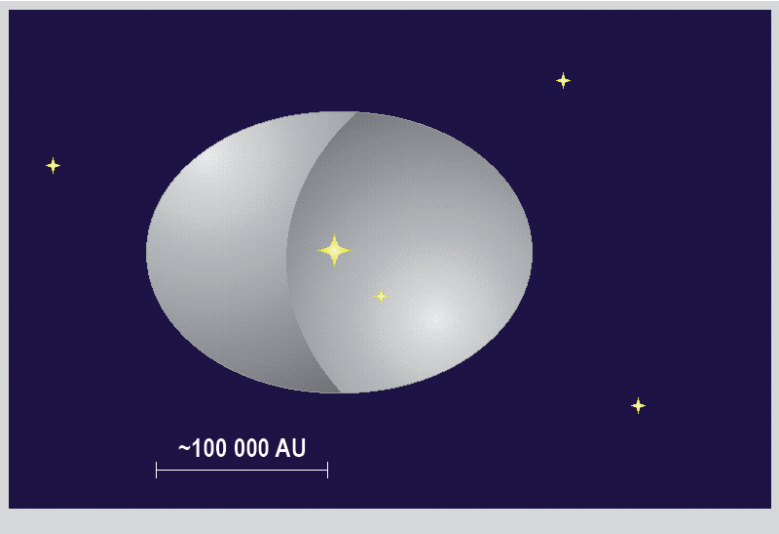
shaw & Ihara 1996). The diary records show how people became increasingly curious after the comet was sighted. Step by step, connections to prior appearances of comets and concurrent societal events are mentioned, accounts of tragic past events. But we also see a plethora of differently shaped and voiced opinions and beliefs: while some people agreed with the possibility of threat and catastrophe, others regarded the predictions with humour, some denied any connection between the comet and earthly events and reasoned why such connections were impossible.

Today, written online sources make it much easier to follow the belief system that used to spread orally only. Online written news and discussions with reader comments open the context and connotations of the events. It is also easy to observe reactions to one and the same event in diverse communities over a large geographical area. We can also distinguish personal narrative belief lines, religious attitudes, and how they combine into a mentally cohesive unit.

I am going to overview vernacular beliefs related to two comets. Information and comments on the comet Lulin characterise the needs fulfilled by comet folklore in contemporary society. For comparison purposes, risk narratives and preceding-following panic related to the periodically appearing beautiful and noteworthy Halley comet is used. The tails of both comets are known to contain poisonous gases which have led to speculation as to their threat to life.

For habitants of the planet Earth the comet Lulin was undoubtedly an insignificant celestial phenomenon. Without attention from the media and scientists, it would have remained in the knowledge of the first and foremost professional and hobby astronomers only. However, mini-narratives, beliefs and arguments recorded online indicate that a phenomenon almost invisible to the naked eye is verbalised, inducing contemplation of the future and various emotions.

Unlike Lulin, there have been hundreds of comets that were easily observable during their approach to the Earth over a longer time period, creating fertile ground for proliferation of panic and narratives. While the same comet passes the Earth repeatedly, the long interval (sometimes spanning thousands of years) between its reappearances keeps people from perceiving it as recurrent. One of the most remarkable comets appeared



Most comets with a long orbit are thought to originate from the Oort cloud that surrounds the Solar system – a cloud of ice and gas of immense proportions. The Oort cloud was first described in the 1950s. Drawing by Andres Kuperjanov.

in 1843 and passed very close to the surface of the Sun. As the comet was 60 times brighter than the full moon and visible during daytime beside the Sun, people experienced a flash flood of rumour and predictions. Estonia was among the places where it caused expectations of the end of the world. The comet's appearance coincided with hard times and one of the doomsday prophets was (the locally renowned prophet) Maltsvet. The tail of that comet stretched to 300 million kilometres or 2 astronomical units and was a significant for people alive at the time. Forty years later, in 1882, the brightest comet of all times was visible in the sky (Tago 1997).

About a century ago, the Earth was approached by the comet Halley that orbits the Sun in about 75 years and is visible to the naked eye. If you are lucky, you can see the Halley comet twice in a lifetime. One of the best publicised examples is related to Mark Twain's: the American writer was born two weeks after the Halley's Comet's perihelion, and died on April 20, 1910, one

day after Halley's Comet brushed. In 1909 he wrote in his autobiography:

> *I came in with Halley's Comet in 1835. It is coming again next year* [1910]*, and I expect to go out with it. It will be the greatest disappointment of my life if I don't go out with Halley's Comet. The Almighty has said, no doubt: 'Now here are these two unaccountable freaks; they came in together, they must go out together'* (Litt 2009).

However, connections between the human life and a comet were drawn among the higher and middle class long before the time of Mark Twain. Knowledge from the sphere of interest among the higher and middle classes reached laymen orally or via calendars and newspapers. Information about the fate of rulers and the likelihood of war breaking out is always interesting for everyone as they have a profound impact on everyone's life.

Risk narrative researcher Gaspar Mairal points to the long-term hybridisation process that has been going on between culture and science, making them inseparable. He also draws attention to matrices, a narrative texture used by the media when talking about possible threats and catastrophes. This is undoubtedly a key to some comet fears and narratives. According to G. Mairal:

> *Thus, the narrative texture is laced with a little science, including calculations such as the temperature (which could be measured accurately) and precise references to chemistry. These and other features would contribute to the creation of a journalistic prototype for narratives of risk, to the point where the very origins of journalism are directly related with accounts of catastrophes and epidemics in which scientific data forms a central pillar of credibility* (Mairal 2011: 69).

The Comet Lulin – a Far Out Comet with a Poisonous Tail

On July 11, 2007, student Quanzhi Ye from China's Sun Yat-sen University in Guangzhou discovered a new comet. He was working in Taiwan at the Lulin observatory, and named the comet

after the observatory. The comet followed an orbit relatively distant from the Sun and Earth, and displayed a green tail.

Comets are often compared to a dirty snowball composed of dust and ice. This nucleus "snowball" is followed (rarely preceded) by a gaseous tail. Sunlight reflected off the tail leaves a beautiful multicolour line in the sky. The chemical composition of comet tails varies, Lulin's tail is similar to Halley's as both contain cyanogen. Lulin became visible to the naked eye only in January and February of 2009 and it was well publicised that it will pass the Earth at a far distance.

Alan Hale, who discovered the Hale-Bopp comet, describes his first sighting of the comet Lulin in 2007 and informs of the opportunity to observe it in winter 2009:

> *Comet Lulin's main treat for us will come after the beginning of the New Year, and in fact it should become visible in the morning sky in late December or early January* (Hale 2007, 2009).

The new comet was the focal point of observer interest right before sunset throughout 2008. The observers calculated and refined its orbit, and predicted when the comet will be visible. An overview of astronomy news shows how G. Marsden calculated the trajectory of its parabolic orbit with the perihelion of 1.24 AU for January 2009. The comet was becoming increasingly larger during late 2008, displaying a magnitude of around 11.0 in early July, 10.5 in early August, 10.0 in early September and 9.5 by October. Chris Wyatt in Australia sighted the comet with his 25 cm reflector on October 18. J. J. Gonzalez from Spain announced that he observed Lulin on October 18 and 19 with a 25x100 spyglass – the comet's altitude was only 7–8 degrees – and measured the nucleus's diameter as 4'. D. A. J. Seargent from Australia spotted the comet with a 25x100 binocular before it coincided with the sun on October 17, determining its magnitude at 8.1 and the nucleus diameter as 5'. One of the most persistent observers J. J. Gonzalez spotted the comet again on December 21 – Lulin was 7 degrees above horizon, nucleus diameter 2.5'.

Later, astronomy news pages and the media specified that

> [---] *comet Lulin will pass from Earth on 2009, February 24. Lulin will stop 38 million miles short of Earth, utterly*

> *harmless. Lulin's green color comes from the gases that make up its Jupiter-sized atmosphere. Jets spewing from the comet's nucleus contain cyanogen and diatomic carbon (C2)* (e.g., Phillips 2009).

The comet could be observed in the south sky before sunrise, at around 3 AM.

Reactions to Lulin in Online Comments

Although the distance and timing of its visibility from Earth did not encourage media attention or influence on the society, both before Lulin appeared in the sky and while it continued to be visible, printed media and online publications continued publishing informative news pieces and overviews. The public reacted with online comments.

A quick glance at Estonia's most popular news portal (Delfi 2009) confirmed that the news was broadcast in Estonia as well. However, the approach of the comet brought a wave of humour, self-irony and political irony – the Republic of Estonia celebrates its anniversary on February 24, the same day the comet passed the planet. Banter concerning the celebration of the anniversary leads to allusions of little green men or ufonauts patrolling the Estonian-Russian border. The humorous comments are

Photo: R. Ligustri (Talmassons, Italy) on Feb. 6, 2009 with an 11-cm refractor and STL11000 CCD camera in New Mexico (USA) telescope.

largely inspired by the comet's coloration, referred to in connection with the blue-black-white national flag, as well as the centrist party well remembered for their ad campaign involving dairy products decorated with a green clover leaf. References to person names are distorted in a manner common to Internet joking (e.g., Anzip instead of Ansip). A few examples:

> nujah, 17.02.2009 13:11
>
> *good timing… for the republic's anniversary.. a green comet will fly over the freedom square during the parade (or over Narva, depending) when the men are marching in uniform. those on the Russian side of Lake Peipsi will see that we're a space nation, too.*

> ss, 17.02.2009 13:14
>
> *yeah-yeah, actually the comet is blue-black-white [colours of the Estonian national flag], it only looks green from the space.*

> Em, 17.02.2009 13:35
>
> *Cool, if it's green then interesting what compounds is it made of? Natural resources fly to us, no need to go mine outer planets?*

> irf, 18.02.2009 00:18
>
> *This is a greeting from the Keskerakond [centrist] party to anzip [the prime minister they oppose], the green color of Lulin comes from their ad posters.*

Next are presented a number of jokes alluding to rumours of Nibiru, the baneful planet that was supposed to cause the end of the world in 2012. Fantasies regarding Nibiru had circled for some years, though they received much less attention than the Mayan end of the world predicted for 2012. The second comment is cautioning rather than humorous, as indicated by the saying "mouth full of water" meaning 'to keep quiet, be silent', and the request for survival advice. The black humour response – "why don't you finish yourself off, why suffer" alludes to anecdotes on advice in case of an atomic explosion – wrap yourself in a white bed sheet and head for the cemetery. The fourth comment again addresses the green colour, now related to an absurd comet wallowing in greenery.

doktor, 17.02.2009 13:46

Yes, it is Nibula. You can see it in the sky because it is circling around the orbit of Earth (read: airport) so as not to collide with other celestial bodies. Just like planes make circular circles above an airfield. According to all predictions, the landing trajectory will be clear by about winter 2012.

From observatory, 17.02.2009 13:48

If Nibiru passed this closely, you all would have your mouths full of water, in the direct sense of the words. I repeat, this is not a joking corner, take this seriously and please give instructions for survival, point by point.

Bb, 17.02.2009 13:53

From observatory, 17.02.2009 13:48

I recommend: why don't you finish yourself off, why suffer here with Nibiru?

dr. känd, 17.02.2009 14:12

T*he green color comes from the fact that the comet is all covered with grass and bushes. NB!*

Contagious on contact, you can catch grass from it.

Only single commentators had read the news piece attentively and asked additional information. Inquiries are freely worded and use a rather more colourful vocabulary (kõõritama – 'to look askance at, to sneak a glance at, to look cross-eyed at', here 'to eyeball tensely, constantly'):

?, 17.02.2009 14:12

I would like to know when I should be looking with a binocular and in what direction? Wouldn't want to stare / to eyeball tensely at the skies all day long.

There were also some worried about the potential danger of the poison in the comet's tail.

Astronomy news on Anglophone sites and elsewhere were mostly constructive estimations with single calls to, e.g., consider the arrival of the comet as a sign, to take it as a serious warning, and (just as in Estonian comments) speculations whether this could be Nibiru, the presaged planet that will bring bad luck. The comments are mostly serious and there is no banter.

For example, someone named Sudhir asks, after Jeremy Perez posted matter-of-fact information about the movement of the comet Lulin on January 14, 2009:

> *Thanks for the information.*
> *Can we call it a nibiru? Change of earth pole seems to be very high?*
> *What do u say?*
> *Have a nice day! We all are sailing in the same boat – why lie now.*
> *Bye*
> *sweet dreams* (Perez 2009)

Halley – a Comet with a Poisonous Tail

The Halley comet has repeatedly been described since 240 BCE by Babylonian and Chinese sky observers, renowned astronomers from the Middle Ages have described details pertaining to the comet's path and semblance. In 1705, the English astronomer Edmond Halley made the discovery that the comet returns every 75 years, and determined its earlier times of appearance. It was news of the Halley comet's repeated return that fuelled contemporary scientific inquiry and initiated the rumours that sooner or later it will crash with the Earth. The comet's malign influence on people and livestock was debated. In 1910, the comet was very close to Earth - on 18 May, the Earth actually passed through the tail of the comet. There was widespread panic when it was revealed that one of the substances in the tail was the toxic gas cyanogen. Astronomer Nicolas Camille Flammarion (1842–1925) claimed that when the Earth passes through the tail, the gas "would impregnate the atmosphere and possibly snuff out all life on the planet" (Strauss 2009).

Since Flammarion published his opinion also in the media, the so-called educated expert opinion spread like a flash all over Europe and America. His opinion led to panicked purchasing of gas masks, "anti-comet pills" and "anti-comet umbrellas" in order to survive the critical time period (Strauss 2009). There were reports of suicides in Hungary and panic spread throughout Europe. People also made their own gas masks, plugged holes,

bought oxygen tubes to live a little while after the rest had died (Leonardoh 2009). The yellow press chose to pursue the story in more fanciful ways, helping to fuel the fears of the impressionable that the end of the world was coming (Long 2009).

News pieces on the poisonous tail of the Halley Comet and the induced rumours and panic were to a large extent based on media information and expert opinions expressed by scholars. Gaspar Mairal (2011: 65) generalises accordingly that

> [---] *transoceanic voyages, commercial calculations and the narration of catastrophes and epidemics, all of which are manifestations of modernity and of the development of scientific and expert knowledge. Hence, we may affirm that risk is an expert concept that nonetheless crossed over into the cultural sphere through narrative, which spread the idea among a progressively wider public in a process that began in the broadsheets, gazettes, newspapers and journals of the eighteenth century and still goes on today in the modern mass media.*

Evolution of Risk Narratives

Gaspar Mairal has pointed out that the 18th century is when journalistic depiction and narration styles of catastrophic events underwent a rapid evolution. The Lisbon earthquake followed by a tsunami with heavy toll on lives, the windstorm that ravaged the Kingdom of England in 1703 (killing more than 8000), as well as the Great Plague of London in 1665–1666 have been recorded in many fictional and semi-fictional pieces. The pioneer in journalistic depiction of catastrophes and epidemics was Daniel Defoe who published a book on the windstorm that devastated Britain one year after the event: an exceptionally fast and immediate reaction.

Defoe's style was characterised by maximum intimacy with the depicted events, on-the-spot interviews and an accurate timeline of events, but also a little melodrama in the name of sensationalism in order to capture the reader's interest. These formed the basis for the journalistic style still in use, relying on characteristics of the so-called relayed information – full of credibility and verisimilitude (Mairal 2008: 47).

A few years ago, as I was writing about the fears, beliefs and narratives related to comets and other celestial phenomena, I noticed a regular repetition of motifs and connections with real life events (Kõiva 2007) but was unable to determine what underpins this phenomenon. However, I now believe that orally transmitted comet folklore (and probably religious narrative heritage in general) can be easily analysed by application of G. Mairal's so-called risk narrative matrix concept. The narrative matrix of threats and risks is a structure used for warning about pandemics, earthquakes, traffic accidents, etc. by highlighting the repetitive nature of these and their risks. Narrative matrices can be dormant in latent form long periods of time until they emerge again due to suitable circumstances.

In 1722, D. Defoe published the novel *A Journal of the Plague Year* wherein he used a new narrative strategy to retell the horrendous events (55 years previous) of the past and to introduce the idea of the probability of these events happening again. G. Mairal believes D. Defoe was aware of his influence as a journalist and the value given to his expert advice which helped his message – the plague can return and immobilise London – reach the audience with expedience. He made use of his childhood memories in order to write the "journal" of a merchant who lived through the 1665 devastation. Personal memories augmented with material unearthed from libraries and archives, narrated in the first person, gave the manuscript unprecedented depth.

This is how descriptions of earlier catastrophes were used to warn from the (potential) repetition of a threatening event, focusing on realism, plausibility and expert opinion, adding a pinch of didactics.

Conclusion

The process of hybridisation of science and culture seems to characterise contemporary risk narratives. Gaspar Mairal's analysis points out that a similar structure is found in older narratives. High frequency of appearances leads to the emergence of belief systems and their activation on recall, oral transmission of heritage and presumably also a natural variability.

The Estonian piece of news with the comments I discussed here was published in the science section of the popular news portal Delfi. The outside source references for the news were scientific: Gary W. Kronk's *Cometography.com: C/2007 N3 (Lulin)*, Seiichi Joshida's astronomy pages: *Weekly Information about Bright Comets* and the NASA science page news *Green Comet Approaches Earth.*

Anonymous comments trailing the news articles indicate that the poisonous tail of the comets caused only negligible waves of rumours and beliefs, unlike in 1910 when some scholars unwittingly pandered to the panic. Panic affected people's behaviour, they sincerely believed in the imminence of a catastrophe, acquired protective gear and even performed suicide.

It is noteworthy that the interpretation of scholarly opinion is not the only source for belief dissemination and risk narratives. For instance, opinions expressed by influential individuals: group leaders, prophets, clairvoyants, media stars. The Hale Bopp comet as a suicide inducer indicates that in addition to fear of comets there are simultaneously circulating other religious and trust-related interpretations and narratives that can in extreme cases lead to self-destruction. For example, the Hyakutake comet visible during the winter of 1996 and the Hale-Bopp approaching the Earth a year later were both breathtakingly beautiful and observable with the naked eye in the sky. While both comets were accompanied by the circulation of various beliefs, including the end of the world stories, the Hale-Bopp stood out in the context of the 20th century due to the mass suicide of the prophet Applewhite and his religious group Heaven's Gate. They regarded the comet as a messenger to be followed by a space ship that will take the members of the religious group to meet a new era. The life and motivation behind the actions of the group are still one of the most studied topics in anthropology of religion and related fields (e.g., Holliman 1998; Howard 2006; also Kõiva 2007). In a way, what happened was uncannily like a continuation of Early Modern Age and more recent discussions where the heavenly bodies were associated with mental landscapes and moral principles. For example, Hell was placed upon a comet by the renowned scientist and philosopher William Whiston (1667–1752) (Jakapi 2005; Schechner 1997). According to the

vernacular beliefs of the 19th century, the gates to heaven (paradise) and hell were connected to celestial bodies.

The comet of 2009, passing the planet further out, allowed for humorous responses and witty remarks. People did not perceive it as a real danger, or very few did. Estonians based a lot of their comet humour on the coinciding with a national holiday, being at the same time self-ironic, and poking fun at political parties and neighbouring countries. Only a diminutive portion elaborated on the topic of the world-destroying Nibiru, which did not induce any reaction from the Estonian general public.

Anglophone web comments are well represented by Jeremy Perez's answer to Sudhiri regarding Nibiru:

> *I've seen no astronomical evidence for Sitchin's proposed, planet Nibiru, but if for a moment we were to consider that such a populated planet actually did exist, I doubt its gravity would be so uninhabitably low that it would be voluminously outgassing as this and other typical comet do.*

Obviously, the brighter and of more spectacular size the heavenly body, the more it is reflected in culture. For instance, comments alluded to rumours about other, similar phenomena. Lulin was accompanied by rumours and beliefs of a heavenly catastrophe caused by Nibiru, while the greatest resonance was caused in 2009 by the Mayan end-of-the-world prediction for 2012.

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Through the Ages II. Time, Space, and Eternity

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