

# Management of the digital transformation: Ten theses

Inaugural lecture

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# Three phenomena – ten research questions – ten theses

## DIGITAL SOCIAL MEDIA

1. Is aggregated information from digital social media (e.g. Twitter) rich in content or just “smoke and mirrors”?
2. Do information signals from social media influence the decisions of professional actors?
3. Do user-generated texts in digital social media contain information that allows predicting the professional success of these users?

## BLOCKCHAIN TECHNOLOGY

4. Does blockchain technology really create radically new business models or is it just “old wine in new bottles”?
5. Will “decentralized” business models based on blockchain technology become widely accepted?
6. How could blockchain technology create a completely new industry just ten years after its invention?

## CHANGES IN THE WORLD OF WORK

7. Do new digital tools for shaping the world of work (e.g. gamification) have an equally positive effect on all employees?
8. What employer characteristics can (start-up) companies use to attract innovative, proactive and entrepreneurial applicants?
9. Do traditional instruments of employee participation have a positive effect on innovative behavior?

## MANAGEMENT OF THE DIGITAL TRANSFORMATION

10. What are the tasks of management research in digital transformation?

# 01| Value of the information content of digital social media

Is aggregated information from digital social media (e.g. Twitter) rich in content or just “smoke and mirrors”?

## Election forecasting

### Examples

CDU wants strict rules for Internet  
CSU continues attacks on partner of choice FPD  
Only a matter of time until the SPD dissolves  
Whoever wants civil rights must choose FDP!  
Society for Human Rights recommends: No government participation for Die Linke  
After the crisis only Green can help HTTP:[...] Grüne+

### Abstract

This study investigates whether microblogging messages on Twitter validly mirror the political landscape off-line and can be used to predict election results. In the context of the 2009 German federal election, we conducted a sentiment analysis of over 100,000 messages containing a reference to either a political party or a politician. Our results show that Twitter is used extensively for political deliberation and that the mere number of party mentions accurately reflects the election result. The tweets' sentiment (e.g., positive and negative emotions associated with a politician) corresponds closely to voters' political preferences. In addition, party sentiment profiles reflect the similarity of political positions between parties. We derive suggestions for further research and discuss the use of microblogging services to aggregate dispersed information.

### Keywords

Twitter, microblogging, information market, prediction markets, election forecasts, politics, elections, sentiment analysis

## Forecasting share prices

*European Financial Management*, Vol. 20, No. 5, 2014, 926–957  
doi: 10.1111/j.1468-036X.2013.12007.x

### Tweets and Trades: the Information Content of Stock Microblogs

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### Abstract

*Microblogging forums (e.g., Twitter) have become a vibrant online platform for exchanging stock-related information. Using methods from computational linguistics, we analyse roughly 250,000 stock-related messages (so-called tweets) on a daily basis. We find an association between tweet sentiment and stock returns, message volume and trading volume, as well as disagreement and volatility. In contrast to previous related research, we also analyse the mechanism leading to an efficient aggregation of information in microblogging forums. Our results demonstrate that users providing above average investment advice are retweeted (i.e., quoted) more often and have more followers, which amplifies their share of voice.*

**Keywords:** Twitter, microblogging, stock market, investor sentiment, text classification, computational linguistics

## Identification of events relevant to the share price

**JBFA** Journal of Business Finance & Accounting  
*Journal of Business Finance & Accounting*, 41(7) & (8), 791–830, September/October 2014, 0306-686X  
doi: 10.1111/jbfa.12086

### News or Noise? Using Twitter to Identify and Understand Company-specific News Flow

TIMM O. SPRENGER, PHILIPP G. SANDNER, ANDRANIK TUMASJAN  
AND ISABELL M. WELPE\*

**Abstract:** This study presents a methodology for identifying a broad range of real-world news events based on microblogging messages. Applying computational linguistics to a unique dataset of more than 400,000 S&P 500 stock-related Twitter messages, we distinguish between good and bad news and demonstrate that the returns prior to good news events are more pronounced than for bad news events. We show that the stock market impact of news events differs substantially across different categories.

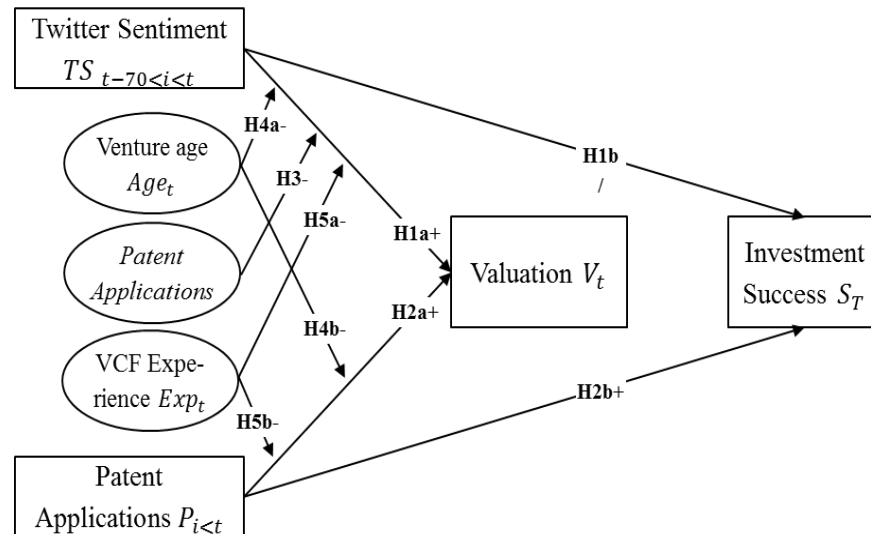
**Keywords:** event study, news events, information leakage, market reaction, computational linguistics

## THESIS 1:

Digital social media are information markets whose aggregated signals can be used to predict economic, political and social phenomena.

## 02| Influence of information signals from digital social media on decisions of professional actors

Do information signals from social media influence the decisions of professional actors?



Method	Results
<ul style="list-style-type: none"><li>▪ Analysis of 412,000 tweets about 37 technologies from 2008-2017 (e.g. 3D printing, GPS, SaaS, VoIP)</li><li>▪ Determination of Twitter sentiment (positive/negative mood) about the technologies</li><li>▪ Influence of the sentiment on:<ul style="list-style-type: none"><li>▪ Valuations of start-ups by venture capitalists (VCs)</li><li>▪ Actual investment success (acquisition or IPO)</li></ul></li></ul>	<ul style="list-style-type: none"><li>▪ Twitter sentiment predicts the valuations by VCs – but not the ultimate investment success (acquisition or IPO)</li><li>▪ Influence of Twitter sentiment stronger the younger the start-up is</li><li>▪ Influence of Twitter sentiment independent of the VCs' experience</li></ul>

### THESIS 2:

Signals from digital social media influence the decisions of professional actors, who overestimate the information content of these signals.

## 03| Extraction and use of information signals from user-generated texts to predict behavioral outcomes

Do user-generated texts in digital social media contain information that allows predicting the professional success of these users?



Method	Results
<ul style="list-style-type: none"> <li>Analysis of tweets from 911 venture capitalists (VCs) based on an average of 785 tweets and 4,945 words → Extraction of Big 5 personality traits</li> <li>Analysis of the influence of personality traits on investment success in 8,258 investments</li> </ul>	<ul style="list-style-type: none"> <li>Extraversion has a positive effect on investment success</li> <li>Tolerance and conscientiousness have a negative effect</li> <li>Effects are treatment effects: Investors create added value for the companies (vs. select ex ante higher value companies)</li> </ul>

### THESIS 3:

The aggregated statements of users of digital social media contain valid information about their personality traits, which in turn can predict results from their professional context.

## 04| Creation of new business models based on blockchain technology

Does blockchain technology really create radically new business models or is it just “old wine in new bottles”?

WHAT'S NEXT WITH BLOCKCHAIN: BUSINESS MODELS

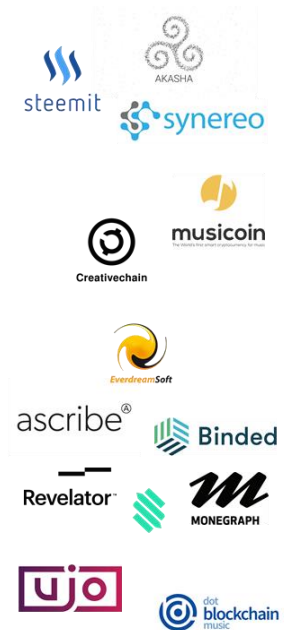
# BLOCKCHAIN IS CHANGING HOW MEDIA AND ENTERTAINMENT COMPANIES COMPETE

Companies are using new applications to rethink their business models and — in some cases — disrupting their industries.

BY ANDRE DUTRA, ANDRANIK TUMASJAN, AND ISABELL M. WELPE

FALL 2018 MIT SLOAN MANAGEMENT REVIEW

	BUSINESS MODEL	WHO IT SERVES	WHAT IT PROVIDES	HOW IT USES BLOCKCHAIN	VALUE IT GENERATES FOR THE COMPANY
DISRUPTIVE BUSINESS MODELS (THREATS)	Monetizing content for both creators and curators	Social media users Content creators and curators	Monetary incentives for posting and voting A decentralized, censorship-free platform	Blockchain content ledger Micropayments Cryptocurrency	Selling the power to influence Transaction fees, commissions
	Building a one-stop content shop	Digital content creators Digital content consumers	Single place for publishing, distributing, and consuming content Direct transactions between creators and consumers	Smart contracts Smart property Cryptocurrency	Transaction fees, commissions Selling original content Platform licensing Services around the open-source platform
SUSTAINING BUSINESS MODELS (OPPORTUNITIES)	Protecting intellectual property	Digital content creators	Simplified copyright registration and distribution of digital content	Time-stamping Smart property	Transaction fees, commissions
	Digitizing the music value chain	Existing music value chain players	Reduce transaction costs Speed up revenue distribution	Smart contracts Smart property Blockchain content ledger	Services around an open-source platform
	Playing and trading	Mobile gamers	Full off-game ownership of game assets, tradeable and sellable with cryptocurrency	Smart property Cryptocurrency	In-game asset sales

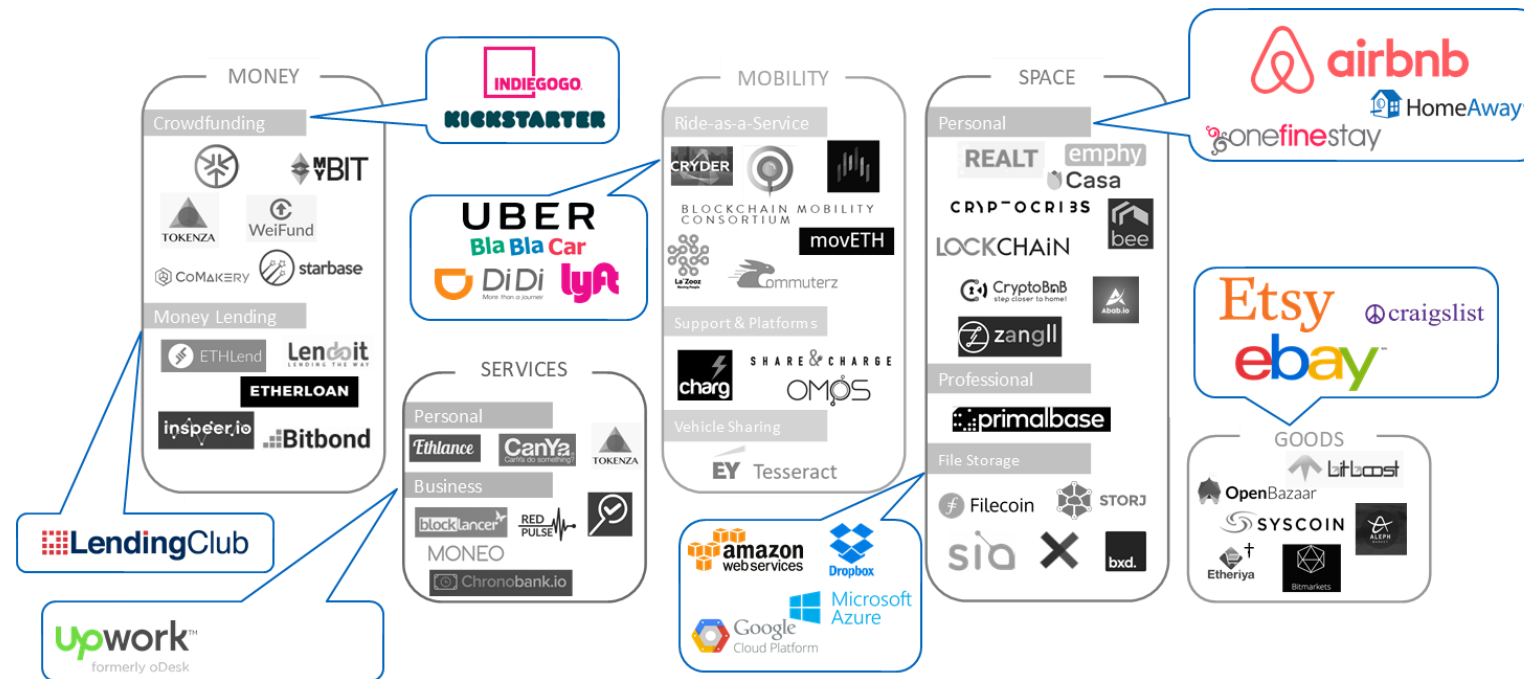


### THESIS 4:

Blockchain technology has the potential to enable new business models – however, a paradigm shift on both the company and the customer side is necessary for a comprehensive implementation.

## 05| Implementation of “decentralized” business models based on blockchain technology

Will “decentralized” business models based on blockchain technology become widely accepted?



### Conclusions

- Only a few blockchain business models are actually “decentralized”
- Decentralization substantially increases the competence requirements for companies and customers
- Paradigm shift as a prerequisite for comprehensive implementation: Fundamental change of “mindset”

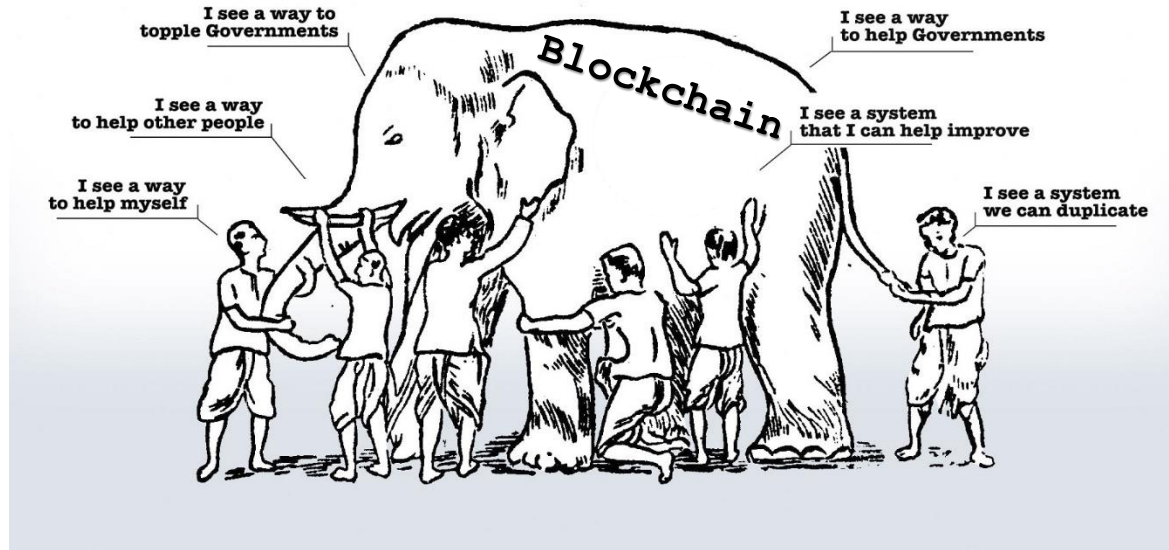
### THESIS 5:

Indeed, “decentralized” business models require a high level of participation and competence from customers, so that not only a paradigm shift but also increased competence on the customer side is required for nationwide implementation.



## 06| Blockchain technology as the trigger for the emergence of a completely new industry

How could blockchain technology create a completely new industry just ten years after its invention?



- Blockchain technology combines several desirable features that are in line with the current zeitgeist of digital transformation:
  - Decentralization/disintermediation
  - Transparency
  - Security/unchangeability
  - Automation (“smart contracts”)
- Blockchain technology as a *projection screen*: Various actors interpret parts of the “blockchain technology” through the perspective of their personal experiences or as a mirror of their individual wishes

### THESIS 6:

Blockchain technology combines several generally desirable features that are in line with the current zeitgeist of digital transformation, contributing to its rapid growth, spread and establishment.



# 07| Effects of new digital tools for designing the world of work

Do new digital tools for shaping the world of work (e.g. gamification) have an equally positive effect on all employees?

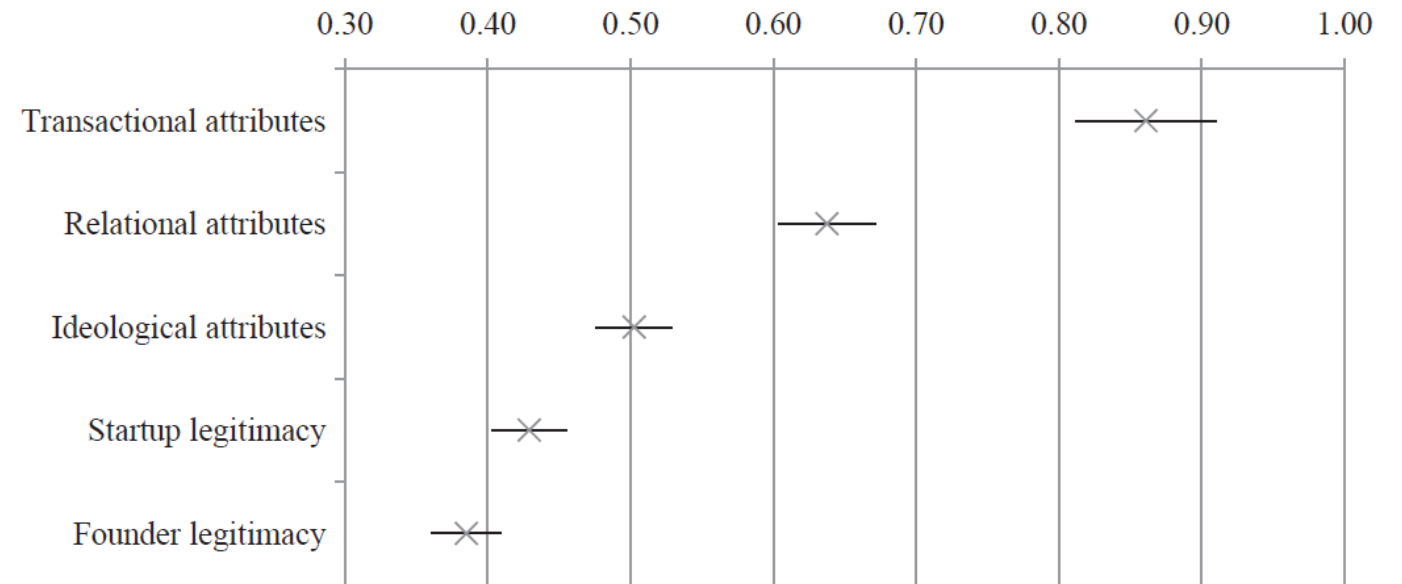


## THESIS 7:

The effect of new digital tools depends strongly on personality traits, so that the use of such tools should only be in selected contexts and user-specific.

## 08| Attractiveness of start-up culture vs. traditional employer characteristics

What employer characteristics can (start-up) companies use to attract innovative, proactive and entrepreneurial applicants?

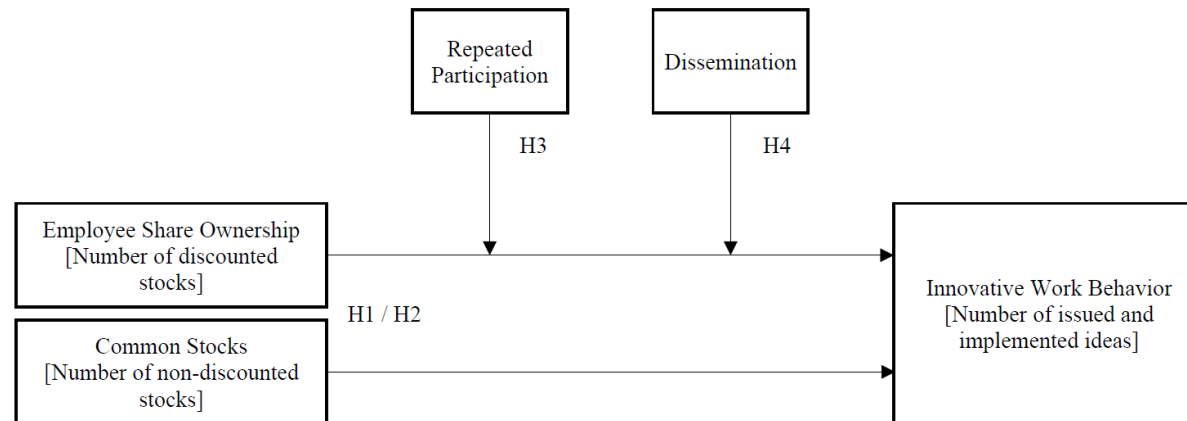


### THESIS 8:

For applicants, traditional employer characteristics are also central in innovative contexts, such as start-up companies.

## 09| Impact of traditional employee participation instruments on innovative behavior in companies

Do traditional instruments of employee participation have a positive effect on innovative behavior in companies?



Method	Results
<ul style="list-style-type: none"><li>Employee shares: Data analysis of &gt;155,000 employees of a large automotive manufacturer over a period of 5 years</li><li>Analysis of the influence of employee shares vs. regular shares on innovative behavior (number of ideas introduced and implemented)</li></ul>	<ul style="list-style-type: none"><li>Positive influence of employee shares on innovative behavior</li><li>No effect of ownership of ordinary shares</li><li>Amortization of about 9% of the cost of the program through the implemented ideas alone</li></ul>

### THESIS 9:

Traditional instruments of employee share ownership are not only asset-building, but also encourage innovative behavior among employees.

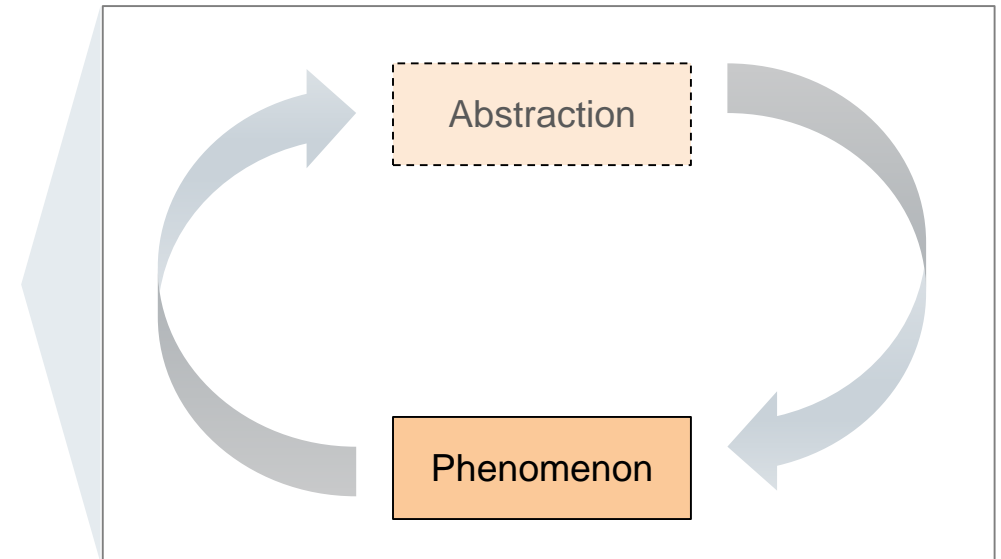
# 10| Tasks of management research in the digital transformation

What are the tasks of management research in the digital transformation?

## Principles

1. Immersive engagement with the phenomenon under investigation
2. Foundation in and use of technologies (hardware and software)
3. Central importance of the interaction of technologies and institutions with human experience and behavior
4. Interface between business, economics, computer science and behavioral sciences
5. Constructive questioning of existing management approaches against the background of current developments (but not as an end in itself)
6. Differentiation between transient vs. constant concepts
7. Data and evidence orientation in the derivation of design approaches

## Approach



### THESIS 10:

Management research in digital transformation should develop evidence-based design approaches for firm management at the interface of business, economics, computer science and behavioral sciences, based on an immersive engagement with the phenomenon.