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31 AUG — 1 SEP

THE SCIENCE of MAGIC CONFERENCE

2 DAYS OF WONDER

Goldsmiths
UNIVERSITY OF LONDON

FOR TICKETS AND INFO, VISIT: WWW.SCIENCEOFMAGICASSOCIATION.ORG

# CONFERENCE PROGRAM

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# Scientific Program

Science of Magic Association Meeting

31 August—1 September, 2017

Goldsmiths University of London

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**Goldsmiths**
UNIVERSITY OF LONDON

## A Message from the SOMA Committee

Welcome to the first official conference of the Science of Magic Association! We are excited to showcase the work that scientists and magicians around the world are doing to enrich our understanding of the nature, function, and underlying mechanisms of magic. This meeting is not only intended to afford great opportunities to build collaborations and identify new shared interests between magicians and scientists. It will also allow us the opportunity as an organization to construct and begin implementing a mission statement. We thank you for engaging in what we see as an important dialogue that has great potential for speeding the rate and quality of scientific discovery while enhancing the artful performance of magic.

Gustav Kuhn
Matt Tompkins
Cyril Thomas
Anthony Barnhart
Jay Olson

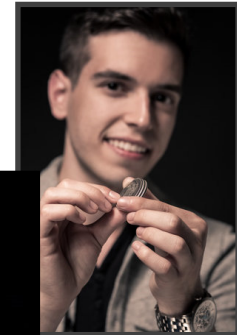## The Science of Magic Association

## Gala Show 2017

30 August — 19:00

The Amersham Arms, 388 New Cross Road, London

Performers include…



Rob Bailey

Edward Hilsum

Juan Tamariz

Pit Hartling

Thomas Fraps

## Program at a Glance:

| Wednesday, 30th August, 2017 |
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| 19:00 | **Science of Magic Gala Show** <br> The Amersham Arms, 388 New Cross Road |
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| Thursday, 31st August, 2017 |
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| 9:00-10:00 | Registration & Coffee | |
|---|---|---|
| 10:00 | Gustav Kuhn | Welcome to SOMA 2017 |

**Talk Session 1: Perception & Attention (10:20-12:30)**

| 10:20 | Anthony Barnhart | Tracking the 'off-beat': Magical contributions to the study of temporal attention |
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| 10:40 | Vebjørn Ekroll | Never repeat the same trick twice – unless it is based on amodal completion |
| 11:00 | Cyril Thomas | The Flushtration Count Illusion: How magicians can trick our high level associative process? |
| 11:20 | **Coffee Break** | |
| 11:50 | James Rivière | Attentional dynamics in complex natural environments: Evidence from magic in toddlers |

| 12:10 | Jeniffer Ortega | Errors in visual metacognition using cognitive illusions |
|---|---|---|
| 12:30 | Pit Hartling | **Invited Presentation:** *Beyond Sleight of Hand - Psychological Concepts in Magic* |
| 13:00 | **Lunch** | |
| 14:20 | **Keynote Address: Richard Wiseman** <br> *Why Magic Matters* | |

**Talk Session 2: Applied Magic (15:20-16:30)**

| 15:20 | Steven Bagienski | The crossroads of magic and well-being: A review of wellbeing-focused magic programs, empirical studies, and conceivable theories |
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| 15:40 | Gareth Foreman | Unlocking potential - Using magic to work with hard to reach clients |
| 16:00 | **Coffee Break** | |
| 16:30 | Matt Pritchard | Unleashing wonder in the classroom |
| 16:50 | Rubens Filho & Alex Pittas | Abracademy, a London based company using magic to enhance learning for children |
| 17:10 | Stuart Nolan | Magic in performative speculative design |

| 17:30 | **Podium Discussion: How can science benefit magic?** Contributors: Thomas Fraps, Pit Hartling, Will Houstoun, Gustav Kuhn, Amir Raz, & Richard Wiseman |
|---|---|
| 18:30-20:00 | **Poster Session & Drinks** |
| 20:15 | **Food & More Drinks at New Cross House** |

## Friday, 1st September, 2017

| 9:00-10:00 | Registration & Coffee |
|---|---|

### Talk Session 3: Belief (10:00-11:20)

| 10:00 | Christine Mohr | Exposure to magic. An experimental approach to test adult belief formation? |
|---|---|---|
| 10:20 | Lise Lesaffre | Is it all Fake Magic or all True Magic? Adults and children fail to distinguish between "real" and "fake" magic. |
| 10:40 | Wally Smith | Twists in conjuring performance: insights into the theory-of-mind concept |
| 11:00 | Rob Bailey | Should psychologists perform mentalism? The ethics of deception. |
| 11:20 | **Coffee Break** | |

### Talk Session 4: Reasoning (11:50-12:50)

| 11:50 | Jay Olson | Using suggestion and magic to influence attitudes |
|---|---|---|
| 12:10 | Joel Leighton | Think outside the box! False solutions block our mind and not the eye |
| 12:30 | Thomas Strandberg | Opening the minds of American voters: Using deception to study political psychology during the 2016 U.S election |
| 12:50 | **Lunch** | |
| 14:20 | **Keynote Address: Thomas Fraps** *Magic, Illusions and the Aesthetics of the Impossible* | |

### Talk Session 5: Magical Miscellany (15:20-17:10)

| 15:20 | Jason Leddington | Theatrical magic & aethetics |
|---|---|---|
| 15:40 | Pascal Gygax | When sexism creeps into perception: How gender stereotypes affect the way we perceive a magic trick |
| 16:00 | **Coffee Break** | |

| 16:30 | Eugene Subbotsky | Magical thinking and creativity in Adults: Is there a relationship? |
| 16:50 | Matt Tompkins | Methods from madness: Magic and the origin of experimental psychology |
| 17:10 | **Podium Discussion: The future of SOMA.** Contributors: The SOMA Committee | |
| 17:30 | **Closing Keynote: Juan Tamariz** *Magic & Psychology* | |
| 18:00 | **Food & Drinks** | |

## Poster Presentations

### Thursday, 31st August, 18:30-20:00

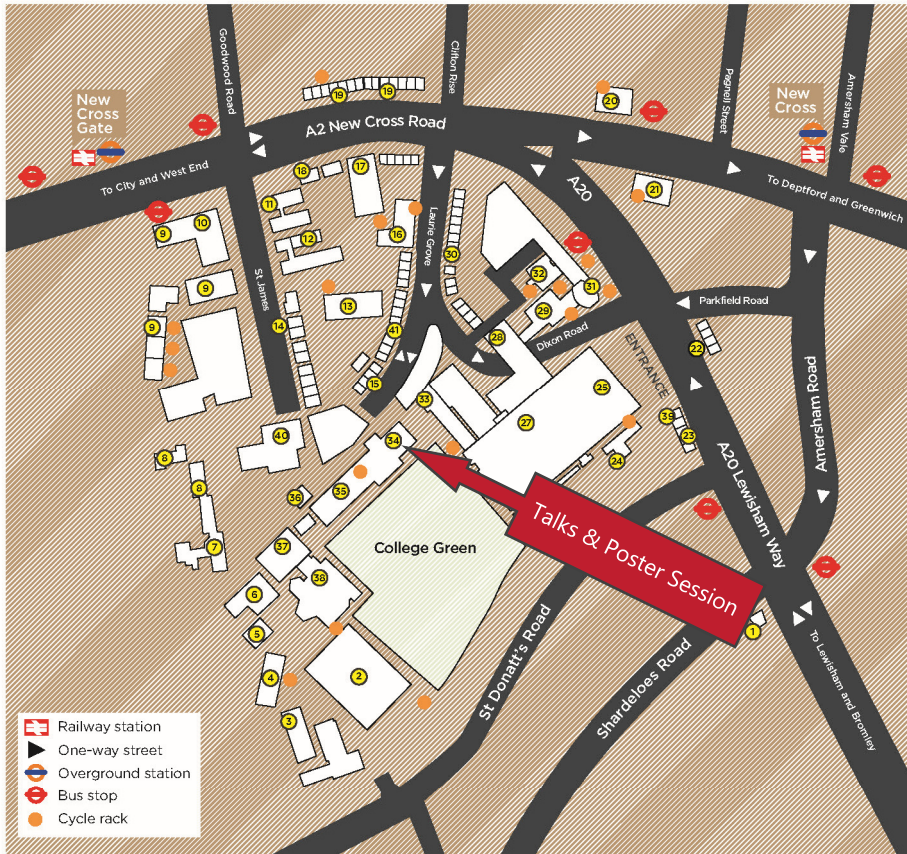| 1 | Hiroki Ozono | What kind of magician's choice is more effective? An experiment |
| 2 | Anthony Barnhart | The symmetry of deception: Predictability reduces attention toward symmetrical actions |
| 3 | Steffen Andersen, Anna Ring, Mats Svalebjørg, & Vebjørn Ekroll | The role of perceptual mechanisms in creating the illusion of levitation |
| 4 | Toni Galligan, Laura Mora, Gustav Kuhn, & Gianna Cocchini | Plasticity of mental hand representation: The magic hand |
| 5 | Keir Simmons, Christine Mohr, Cyril Thomas, & Gustav Kuhn | Belief in the paranormal: Using pre-exposure warnings and alternative explanations to debunk magical event interpretation. |

| 6 | Johnny King Lau, Anthony Haffey, Kei Kuratomi, Hiroki Ozono, Asuka Komiya, & Kou Murayama | When the seductive power of magic overrides prospective risk – why would Pandora open the box? |
| 7 | Elisabeth Vaughan, Hugo Caffaratti, Cyril Thomas, & Gustav Kuhn | Please clap and observe! The effect of audience presence on the experience of magic |
| 8 | Gustav Kuhn & Maximilian Pittas | Don't do it again. Repeating the same trick reduces our magical experience! |
| 9 | Matt Tompkins & Anne Aimola Davies | Now you see it: The influence of misinformation on viewers' misperceptions of a dynamic visual scene |
| 10 | Hugo Caffaratti, Cyril Thomas, & Gustav Kuhn | The Prestige: Why disappearing object must always reappear |
| 11 | Morgan Begey, André Didierjean, & Cyril Thomas | Influence of the credibility of source on the mind fixing effect: A socio-cognitive approach of insight problem solving |
| 12 | Alice Pailhès | I know who you are! Social influence on sensitivity to subtle factors, using magic and mentalism tricks. |
| 13 | Cyril Thomas, André Didierjean, & Gustav Kuhn | It is magic! How impossible solutions prevent the discovery of obvious ones? |
| 14 | Velvetina Lim Siu Ching, Gordon Wright, & Gustav Kuhn | Not so creative after all: The investigation of the dark triad in conducting insight problem solving using classic and magic problems. |
| 15 | Callum Copley | To cast a spell |
| 16 | Kevin L. Ladd, Kyle J. Messick, & Blanca Aranda | Tricking the eye of the motivated beholder: The utility of language in magic performance |

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## Maps:



**Railway station**
**One-way street**
**Overground station**
**Bus stop**
**Cycle rack**

College Green

Talks & Poster Session

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**Gala Show:** The Gala Show is hosted at The Amersham Arms, 388 New Cross Road.

**Presentations:** All presentations take place in the Ian Gulland Lecture Theatre, on the campus of Goldsmiths University of London (location 34 on the map to the left).

**Food & Drinks:** Informal dinner and drink events will be held at New Cross House, 316 New Cross Rd.
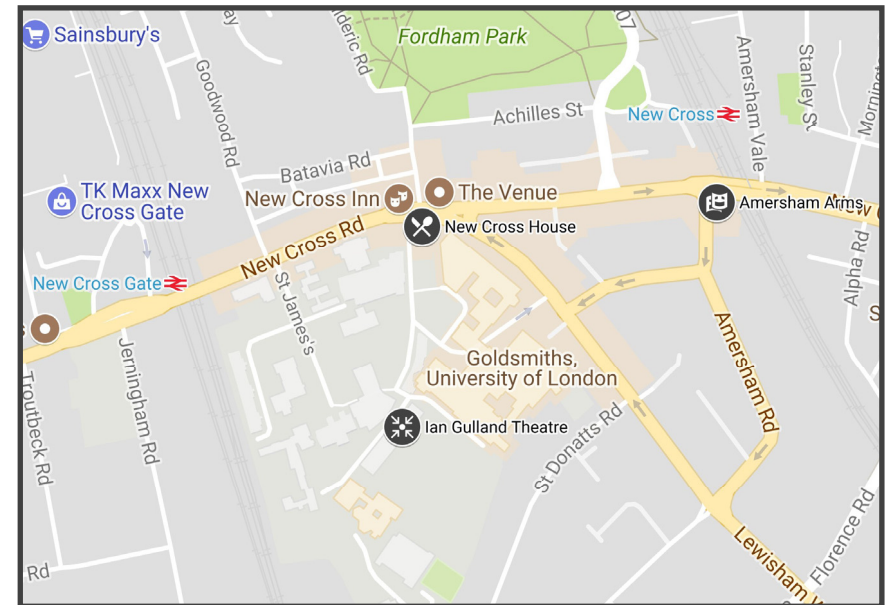
## Keynote & Invited Speakers:

### Pit Hartling

*Beyond Sleight of Hand - Psychological Concepts in Magic*

31 August — 12:30

*Beyond Sleight of Hand* will examine some of the most widely applied non-technical methods in magic (i.e., those that require no sleights). The talk will explore in-transit actions, assumptions, the function of "magic gestures," shaping memory, performing vs. non-performing mode, induced challenges, and others, providing brief examples for each along the way.

### Richard Wiseman

*Why Magic Matters*

31 August — 14:20

This autobiographical talk will reflect on several decades of experience in magic and psychology, focusing on the nature of good magic, my work into the psychology of magic, explorations in Quirkology, and some recommendations for new directions in the relationship between academics and magicians. Five jokes. Three laughs. No tricks.

### Thomas Fraps

*Magic, Illusions and the Aesthetics of the Impossible*

1 September — 14:20

The art of magic is not about presenting puzzles or intellectual exercises in problem-solving. The artistic aim magicians strive for in a magic performance is to induce the feeling of wonder, awe and astonishment by creating the illusion of impossibility. The unique essence of a magic performance is emotional, not rational: the gift to shut down at least for a few seconds any problem-solving faculties of an audience by erasing any possible solutions from their minds, so they know and feel what happened is impossible. The skilled manipulations, secret devices and psychological principles are merely used as tools, as means to an end. This talk explores the nature of magic's playful mysteries and aesthetic impossibilities, contrasting them to aesthetic illusions of other art forms, as well as giving a glimpse on the psychological principles and strategies used by magicians to render their methods invisible from the spectator's cognitive and rational reflexes only to maximize the magical impact of their seemingly impossible illusions.

### Juan Tamariz

*Magic & Psychology*

1 September — 17:30

# Talk Schedule:

## Talk Session 1: Perception & Attention
**Thursday, 31st August 10:20-12:30**

**10:20  Tracking the 'off-beat': Magical contributions to the study of temporal attention**
Anthony Barnhart; abarnhart@carthage.edu
Magicians have a wealth of insights and methods that can inform the scientific study of temporal attention. We describe two experiments on the dynamics of attention that either take inspiration from magic theory or borrow techniques from performance magic. In Experiment 1, magic was used as a tool to study the relationship between microsaccades and covert attention. We monitored participants' eye movements while they engaged in a divided attention task using videos of a magic performance. During critical periods of the videos, successful task performance was contingent upon effectively dividing attention between two vertical locations. We found that microsaccade rates predicted task performance and that microsaccade directionality shifted from horizontal to vertical during these critical periods, suggesting that microsaccades hint at the direction of covert attentional deployment as well as the timecourse of divided attention. Experiment 2 explored cross-modal attentional entrainment, taking inspiration from magic theory. Magicians have highlighted a set of variables that can create moments of visual attentional suppression, which they call "off-beats." One of these involves instantiating a set of rhythmic events wherein deceptive action happens out of phase with the rhythm, consequently evading detection. While attentional entrainment has been widely studied within sensory modalities, magicians seem to be exploiting the phenomenon across modalities by using auditory rhythms (speech or music) to influence visual attention. Using a difficult dot-probe detection task, we present some of the first evidence that the mere presence of auditory rhythms influences *when* visual attention is deployed. Taken together, our results suggest that great scientific insights can be gleaned from magic theory and that temporal attention is a research topic where magician-scientist collaborations can be both fruitful and mutually beneficial.

**10:40  Never repeat the same trick twice – unless it is based on amodal completion**
Vebjørn Ekroll, Evy De Bruyckere, Lotte Vanwezemael, & Johan Wagemans; Vebjorn.Ekroll@uib.no
According to common wisdom among magicians, you should never repeat the same trick twice because it increases the risk that the spectators can figure out the secret behind the trick. Considering that repeating the same trick gives the spectators more time to think, it is obvious that there has to be some truth to this. But how risky is it really? In some cases, there is good reason to believe that it is extremely risky. The vanishing cigarette trick investigated by Kuhn and Tatler [2005, Perception, 34(9), 1155-1161] is a case in point.

The reason why this trick is very easy to debunk at second viewing, is presumably that it is based on inattentional blindness. It is reasonably clear, however, that magic tricks differ with respect to what cognitive and perceptual principles are involved in creating the magical experience. Thus, it is quite possible that repetition of a magic trick is very risky for some tricks, but almost riskless for other tricks. In particular, one would expect that tricks based on cognitively impenetrable perceptual illusions can be repeated many times with little risk that the spectators are able to figure out the secret. We tested this prediction using four tricks based on amodal completion, which produces a cognitively impenetrable perceptual illusion and four tricks involving various kinds of attentional misdirection, including Kuhn and Tatler's vanishing cigarette trick. The participants in our experiment viewed video clips of each of these tricks three times and were asked to explain what they think the secret behind the trick is after each presentation. The results show clear differences between the tricks based on amodal completion and the tricks involving attentional misdirection. As predicted, the former are more difficult to solve, and the solution rates only increase marginally with repeated exposure to the trick.

**11:00  The Flushtration Count Illusion: How magicians can trick our high level associative process?**
Cyril Thomas, André Didierjean, & Gustav Kuhn; cyril.thomas@univ-fcomte.fr
Magic relies on exploiting limitations in cognition, and whilst much research has focused on how magicians manipulate perceptual processes, magic often involve manipulating higher level reasoning mechanisms. The Flushtration Count is a method used to give the illusion that all the cards of a small packet are identical, when in fact they are all different. To produce this effect, the magician repeats the following sequence several time: he shows the face of the bottom card of the stack, turn his wrist, and deals the top card (rather than the one that has been shown) of the stack face down. The aim of the present research is to understand the psychological process involved in this illusion, and to illustrate that people can misinterpret a perceptual sequence even if they attend to the main features of this event. In Experiment 1, we show that most of the participants misinterpret a salient perceptual event (they are sensitive to the Flushtration count), even after the explicit activation of knowledge that contradicts this interpretation. We propose a representational hypothesis: the illusion relies on participants' inability to correctly associate the different pieces of information of the complex sequence. If this hypothesis is correct, we assume that a non-repeated (isolated) Flushtration Count should provide participants more time and cognitive resources to process the complex sequence, and thus make them less sensitive towards the illusion. Results from Experiment 2 confirm this hypothesis. In Experiment 3, we investigate in more detail how participants (mis)represent the event, and we analysed the impact of this (mis)representation on their experience of the illusion. Our results confirm that the Flushtration Count illusion is not based on low-level perceptual failures of individual event components, but instead results from incorrectly combining them, and thus representing the correct event sequence. We discuss the role of "automatic" top-down process and intuitive expectations in perceiving and interpreting complex event sequences.

**11:50  Attentional dynamics in complex natural environments: Evidence from magic in toddlers**

James Rivière; james.riviere@univ-rouen.fr

How visual attention drives the search behavior is still poorly described in young children. Using magic in toddlers, we investigate how attentional dynamics induce constraints in choosing an action to perform and how this interacts with decision-making processes and choices. In our talk, we will present three paradigms involving attentional misdirection and performing under naturalistic conditions (e.g., the task is performed live to each participant). We developed these paradigms with the aim of understanding the interplay between attentional biases and cognitive heuristics in the selection of action. Our results suggest that the attentional focus effect that occurs in some magic tricks is not purely stimulus driven and based on the cue's saliency alone (i.e., the experimenter's hand motion); rather, it relies on top-down influences that direct attention toward a cue only if its feature is relevant in finding the hidden object. We argue that using magic to study limited attention in young children may help us understand more about the attentional-processing limitations in adults.

**12:10  Errors in visual metacognition using cognitive illusions**

Jeniffer Ortega, Patricia Montañes, Anthony Barnhart, & Gustav Kuhn; siempreviva84@gmail.com

Previous research on visual metacognition has shown that sometimes people overestimate their change detection ability; a phenomenon known as change blindness blindness. Counter intuitive cognitive errors lie at the heart of magic, and the present investigation is the first of its kind to use cognitive illusions/magic tricks to study visual metacognition related to overt attention (i.e. eye movements) and its connection to conscious perception. Because the deployment of overt attention is effortless and we spend little time thinking about it, we predicted that participants' awareness of where they look would be driven by visual experience, rather than the eye movements themselves. Furthermore, we predicted that people would rate as more likely to notice a salient event if overt attention is deployed to its location than if it is allocated elsewhere. We present data from an eye tracking study where participants watched videos of four different magic tricks that capitalize on failures of visual awareness. After watching each magic trick, they were asked if they noticed the critical event (i.e., how the trick was done). Additionally, they rated the likelihood of having moved their eyes to the location of the critical event, and the likelihood of detecting how the trick was done if overt attention is allocated to different areas of interest. Participants who noticed the critical event rated the likelihood of having moved their eyes to its location as significantly higher than participants who failed to notice it. Both groups rated the likelihood of detecting the critical event as significantly higher if overt attention is allocated to its location than if it is allocated to a different area. However, eye movement data showed that, contrary to participants' metacognitive judgment, noticing the critical event was not related to the allocation of overt attention. These results indicate that people have wrong intuitions about the deployment of overt attention and its connection to conscious perception. The implications of these findings are discussed in relation to the debate about perceptual phenomenology.

## Talk Session 2: Applied Magic
**Thursday, 31st August 15:20-16:30**

**15:20  The crossroads of magic and well-being: A review of wellbeing-focused magic programs, empirical studies, and conceivable theories**

Steven Bagienski & Gustav Kuhn; stevebagienski@gmail.com

In recent years, magicians and scientists have started to collaborate to gain insight into various psychological functions in an attempt to develop a science of magic. However, despite some apparent applications one underexplored area is the use of magic as a tool to enhance wellbeing. Several past and current magic programs focus on enhancing mental, emotional, and physical wellbeing. The focus of these programs range from integrating magic with physical or psychological therapies to applications in street interventions, hospital environments or classroom curriculums. A few of these programs have been subject to empirical investigation and further studies also explored the overlap of magic with wellbeing. These studies are reviewed in light of how the magic was applied, which encompasses whether the effect on participants' wellbeing arose from witnessing magic, learning its secrets, performing magic, or using it to teach. Overall the methodologies utilised in the studies were rather weak, but preliminary distinctions between the specific positive effects can still be seen and are discussed. Furthermore, these positive effects on well-being can also be separated into interrelated physical, cognitive, social, and affective components. To conclude, possible explanations of the observed benefits are offered that draw upon findings from more established psychological research.

**15:40  Unlocking potential - Using magic to work with hard to reach clients**

Gareth Foreman; gareth.foreman@yahoo.co.uk

Working in a custodial setting my colleague and I have been using magic as a way of helping clients identify strengths, to look at situations differently and the importance of how to use language. At present we deliver a group called Getting It Right which is a CBT based approach which enables our clients to look at and make changes to their offending behaviour. On day one we start with a card trick. I show an effect to the group and then I ask them to recreate it. Once they have reached a solution we get them to identify the skills they have used and then start to relate those skills to real life situations. We also take this opportunity to introduce the concept of misdirection and ask them to identify times when they have been manipulated into criminal behaviours by their peers. On day two we use a mentalism effect. This enables clients to revisit the previously identified skills (positive reinforcement) and to show that how something which seems complicated and seemingly impossible has a simple solution thus opening another conversation on problem solving. Day three is when we use cold reading to introduce 'open questions'. Knowing this enables clients to have more constructive conversations, not only with each other, but how the techniques can be used when released from prison. This is the main body of what we would talk about along with some history of how the use of magic came about, feedback from clients, thinking around which effects to use, further possibilities and future work.

### 16:30  Unleashing wonder in the classroom

Matt Pritchard; matt@sciencemagicshows.co.uk

"It doesn't stop being magic just because you know how it works." - Terry Pratchett. To be gripped by playful wonder is a most joyous experience. For many students their education is an experience that's devoid of joy, play and wonder. Answers become more important than questions. Mystery has been evicted from the classroom. In this session I will discuss how I've used mystery and magic in schools to engage disengaged students, to pique curiosity and to create a desire to understand the science behind the illusions. To move from passive observers to active explorers. I will demonstrate a host of simple science tricks that are excellent 'black box' mysteries to promote creative and critical thinking. And I will show how science and psychological principles can be used as a basis for the development of magic effects.

### 16:50  Abracademy, a London based company using magic to enhance learning for children

Rubens Filho & Alex Pittas; rubens@abracademy.com

For the last two years, Abracademy has been exploring the positive effects of magic on children. We believe that studying magic not only helps children's confidence and communication skills, but also helps them to make friends and better interact within the classroom. We propose that studying magic helps to teach children the valuable speaking and listening skills they may not be collecting from other forms of play. Speaking and listening, requires self-discipline, presentation, storytelling and an ability to empathise with your audience; as you think how the trick looks from another person's perspective. All these skills are more likely to be taken on board by a child if they have a purpose behind doing it, like performing a trick. Abracademy has implemented its magic courses in a number of schools, both independent and public. Courses were applied in two different formats: across one term  (8 sessions of 45 minutes) and one-off sessions, 45 minutes. The feedback so far has been consistently positive. Magic is also being taught in some primary schools who pride themselves on a creative and innovative approach to learning. St John's in Sevenoaks, is one which has reported that students' self-discipline and confidence have improved dramatically since they introduced magic lessons. Sally Quirk, Head teacher of St John's comments: "Magic encompasses many life skills children need to take forward. Magic's ability to 'disguise' learning is particularly valuable for older children, who are often harder to engage in improving speaking skills and listening skills." We are interested in scientifically testing the effect of teaching magic on children so we can properly assess the benefits.

### 17:10  Magic in performative speculative design

Stuart Nolan; stuart@stuartnolan.com

This talk reports on the use of magic in Speculative Design (Dunne & Raby, 2013), including Critical Design (Dunne, 1999), Design for Debate (Dunne, 2008), and Design Fiction (Bleeker, 2009). It focuses primarily on three examples of Performative Speculative Design. Firstly, IdeoBird, a mindreading robot bird created to generate debate around

robotics and Thought Identification Technologies. IdeoBird was initiated by NESTA FutureFest as a Speculative Design for the year 2050. It was later developed as a collaboration between Pervasive Media Studio Bristol and Bristol Interaction Group Bristol University in order to guide interface design and robotics research including the Resonant Bits projects (Bennett et al.,2015). Secondly, Parry, a superstitious A.I. that believes in magic and fortune-telling. Parry was designed in collaboration with Queen Mary University of London to generate debate around belief, bias, and trust in Big Data, robotics and A.I. research as part of the Being-There: Humans and Robots in Public Spaces project. Thirdly, Mindreading Through Drawing, a series of workshops and performances that combine Ideomotor Responses, Muscle Reading, and drawing practices initiated by Cognovo, Plymouth University, to generate debate in cognitive science. These have continued with several other organisations including The Magic Research Group University of Huddersfield, NHS Research Northwest, HyperIsland, The University of Salford, and The Architectural Association, and the Innovate UK & Arts Council Arts+Tech Accelerator. These further debates considered technology innovation, art practice, design, management, architecture, healthcare, and the politics of performance. The talk will highlight the strengths and weaknesses of using magic techniques and performances in Speculative Design, addressing issues of narrative user-experience design, public involvement, appropriation, authorship, accreditation, impact, ethics, and rigour. These issues are situated in the broader context of art-science collaborations, science communication, and the use of associated creatives in academic research.

## Talk Session 3: Belief
### Friday, 1st September 10:00-11:20

### 10:00  Exposure to magic. An experimental approach to test adult belief formation?

Christine Mohr, Lise Lesaffre, & Gustav Kuhn; Christine.Mohr@unil.ch

As children, we are expected to pass periods of enhanced magical beliefs. Subsequently, we are supposed to become rational thinkers, devoid of something as irrational as magical beliefs. The truth, however, tells us otherwise. A large proportion of the general population believes in supernatural phenomena, or reports having had such experiences in the past. Moreover, psychological research shows that magical beliefs positively correlate with a variety of cognitive biases (e.g. right hemisphere language processing, repetition avoidance). Unfortunately, since all of these studies are correlational, there is no way to determine how these magical beliefs might come about in adulthood. For instance, we have close to no knowledge of whether cognitive biases precede magical beliefs or whether magical beliefs precede cognitive biases. Yet, knowing about this causal relationship seems key in understanding adult belief formation (or persistence). We suggest that exposure to magic tricks might help us explore this causal relationship. Magic performances allow us to create the illusion of the impossible, and as such create magical experiences. Affective reactions in response to these demonstrations vary significantly with some individuals attributing real magic powers to such seemingly impossible events. Over the past 4 years we have performed a series of studies to develop

special magic performances that can trigger genuine magical explanations. This approach allows us to assess cognitive biases before and after the magic event, and by inference to move from a correlational to a causal methodology. We provide an overview on this study approach and its potential.

### 10:20  Is it all Fake Magic or all True Magic? Adults and children fail to distinguish between "real" and "fake" magic.

Lise Lesaffre, Gustav Kuhn, Trix Cacchione, & Christine Mohr;
Lise.Lesaffre@unil.ch

In 1980, Benassi et al. (1980), reported on a study comparing beliefs and event explanations when a magician was introduced as a psychic or a conjuror. Magic offers a valuable tool to investigate belief formation and we recently followed suite (Mohr et al., 2015), using various framing conditions and magic tricks in adults and children.  Over a series of five large-scale studies, we conclude that this type of framing has a very limited influence on people's causal explanations of an anomalous events. Moreover, we conclude that on the group level, individuals struggle to distinguish between anomalous events that are caused through supernatural powers (i.e. real magic) or simple conjuring tricks (i.e. false magic). Our adult participants (University students) rarely attributed the anomalous events to religious powers. Children on the other hand, where happy to attribute religious powers (god) to simple magic tricks, illustrating their willingness to entertain religious beliefs. Yet, in all groups, people often simultaneously acknowledge both, supernatural and conjuring explanations. This tendency was observed despite increasingly explicit definitions and explanations. We outline our new procedures and observations in more detail.  Moreover, we will discuss the surprising, and counter intuitive findings that illustrate how contradictory explanations can co-exist. These findings have important implications for belief formation, rigidity in thinking and resistance to adaptation of new information to ongoing thought.

### 10:40  Twists in conjuring performance: insights into the theory-of-mind concept

Wally Smith; wsmith@unimelb.edu.au

Magicians have always playfully and cleverly subverted the presumed format of the magic trick for dramatic and deceptive effect. The aim has been to complicate the standard witnessing of something impossible, by introducing a twist such as the spectator believing that the magician has gone wrong or that the method is clearly evident, only for the magician to turn the tables and bring the trick back to a successful conclusion. Such techniques have been variously discussed as 'pretended accidents' (Robert-Houdin, 1868), sucker tricks, or 'failureffects' (Wonder & Minch, 1996). In this paper, I explore the nature of these more complex patterns of conjuring performance and consider what they reveal about the nature of deception. In particular, I consider what they imply for the concept *theory-of-mind*, a term used by psychologists and also Artificial Intelligence researchers to describe the human capacity for awareness of other minds and the capacity to reason about those minds. I argue and attempt to demonstrate that the complex formats of conjuring provide unique insights into our capacity for advanced forms of *theory-of-mind* reasoning.

### 11:00  Should psychologists perform mentalism? The ethics of deception.

Rob Bailey; rob@virtualbailey.plus.com

This talk explores the ethics surrounding magical performances, specifically of mentalism. It will draw upon several years of experience of performing mentalism shows whilst also being a Chartered Psychologist. Rob Bailey is a registered Occupational Psychologist, Member of the Magic Circle and a veteran of the Edinburgh Festival Fringe, where, for 4 years he performed a one-man show as a 'mind reader'. His original intention for the show was to model critical thinking in an entertaining way: by using a script without a single lie, clearly explaining a lack of any psychic capability, then parodying the paranormal and pseudoscience with gentle mockery. Regrettably, as shown in otherwise positive critic reviews, there were frequent misunderstandings: • "Bailey makes it very clear that the tricks he performs are all based on psychology." (I didn't.) • "...but if he was attempting to convince us it was just about trickery and illusion rather than mind-reading – well actually, the mind-reading stuff was on the whole pretty convincing so I was left a bit confused as to what I was meant to believe or not from the show." In order to avoid reinforcing any further myths about psychology, Rob now clearly delineates his personas for performances: 1. Rob Bailey, the psychologist, performs no conjuring – only routines based on genuine psychological principles (e.g. quirks of bias, memory and perception). These are followed by full disclosure of the method and explanations of the psychology behind the routines. 2. Rob Bailey, "the mindreader for entertainment purposes only", never mentions psychology. Rob will present examples of both of the above, via videos and live performance. He will discuss recent research by SOMA members into the intransigence of spectator beliefs. He will also talk about the difference between magic and mentalism, and the special power that mentalism holds over audience beliefs.

## Talk Session 4: Reasoning
### Friday, 1st September 11:50-12:50

### 11:50  Using suggestion and magic to influence attitudes

Jay Olson; jay.olson@mail.mcgill.ca

As demonstrated by hypnosis and placebo effects, suggestion can powerfully impact consciousness. Previously, using suggestion and magic, we convinced participants that a (sham) brain scanner could insert thoughts into their heads. Here, we attempted to persuade participants that the same scanner could assess their inner, unconscious personality traits — their "true selves". Under the guise of a neuropolitics study, we told 65 participants that we could assess their brain's attitudes towards nationalism, conservation, and charity. Participants completed several attitude measures while wearing a sham EEG cap. Using various covert magic tricks, we convinced participants that the machine could infer their conscious and unconscious attitudes. Participants were then randomly assigned to receive either positive or negative feedback about their brain's attitudes towards charity. Results showed that participants internalised this feedback, which strongly influenced their subsequent charity attitudes (Cohen's d = 1.5). Our study demonstrates the power of suggestion and highlights the usefulness of magic and deception in building novel research paradigms.

**12:10  Think outside the box! False solutions block our mind and not the eye**

Joel Leighton, Cyril Thomas, & Gustav Kuhn; jleig001@gold.ac.uk

Previous research has shown that a false solution can prevent people from discovering the correct solution to a problem, even when they know that the false solution is incorrect and impossible (Thomas, Didierjean &amp; Kuhn, submitted). This principle plays an important role in magic; Lamont and Wiseman (1999) have suggested that the false solution misdirects people's attention from relevant alternatives, thus preventing the spectator from encoding details about the trick's method that are necessary for discovering the correct solution. The current study used eye tracking to examine whether a false solution prevents the encoding of alternatives relevant to the problem. Half of the participants watched a video clip of a magician performing a magic trick that contained an intuitive and plausible solution to the trick, which at the end was show to be incorrect (i.e. false solution trick). The other half of the participants watched the same trick without the false solution (control trick). As predicted, participants watching the false solution trick were significantly less likely to spontaneously discover the correct method than those watching the control trick. The eye tracking data revealed that participants fixated the false solution significantly longer in the false solution condition than in the control condition. However, there was no significant difference in eye movements between those who detected the method and those who did not, suggesting that detection was independent of encoding. These results suggest that the false solution influences representational, rather than attentional, encoding processes. In the final part of the experiment participants were asked to rate the likelihood of the correct solutions; participants watching the false solution trick rated the correct solution as no more likely than those in the control condition, providing evidence for a structuring model of problem solving.

**12:30  Opening the minds of American voters: Using deception to study political psychology during the 2016 U.S election**

Thomas Strandberg; thomas.strandberg@fil.lu.se

American politics has become increasingly polarised. Despite this polarisation, we demonstrate that a simple sleight of hand can make people believe that they are open-minded about competing political candidates. We approached 136 participants at the first 2016 presidential debate and on the streets of New York. Participants filled out a survey rating Hillary Clinton and Donald Trump on various leadership traits. We then we covertly manipulated their surveys so that the majority of their ratings were neutral rather than favouring a single candidate. No participants noticed this manipulation. When asked to explain the reasoning behind their responses, the large majority of them immediately rationalised this neutral position – even though they reported a more polarised view moments earlier. These findings demonstrate the power of false beliefs and self-persuasion in shaping one's political views. Further, our study underlines the potential for using suggestion and deception to study the human mind.

## Talk Session 5: Magical Miscellany
**Friday, 1st September 15:20-17:10**

**15:20  Theatrical magic & aethetics**

Jason Leddington; jason.leddington@bucknell.edu

Theatrical magic has been almost entirely ignored by philosophers, art critics, and art historians. On the other hand, cognitive scientists have long recognized the potential to use magic to study the mind; but this work typically treats magic merely as a means, not as an object of study in itself. In particular, there has been no systematic examination—whether psychological or philosophical—of the nature of the pleasure we take in watching a magic performance. Leddington (2016) lays a foundation for this examination by providing a philosophical analysis of the cognitive dimensions of the experience of magic. The core idea of this analysis is that the experience of magic is essentially aporetic—it involves a form of intellectual bafflement, and so, a form of cognitive failure—that follows from encountering an apparent violation of the laws of nature that we know is fake, but which we nevertheless cannot explain. There are two distinct negative moments in this experience: (1) the apparent violation of our ordinary, yet well-founded expectations for how objects behave (naïve physics); and (2) our ongoing failure to be able to be able to make sense of this violation (beyond noting that "it must be trick"). The question is then: how can an experience in which these moments are primary nevertheless be aesthetically pleasurable? This talk marshals work in philosophical aesthetics and empirical psychology to sketch an answer that both explains magic's distinctive appeal and reveals connections to other genres—in particular, comedy and horror.

**15:40  When sexism creeps into perception: How gender stereotypes affect the way we perceive a magic trick**

Pascal Gygax; pascal.gygax@unifr.ch

We present an experiment to investigate the effect of gender stereotype on the perception of magic, in terms of how good a trick is. Since the 14th century, social conventions have treated magic as a male-specific activity (e.g., Houdini), and we investigated the impact of these social conventions (in terms of stereotypes) on the way magic tricks are perceived today (how good people think the tricks are). We presented participants with 14 different magic tricks in which only the hands were visible. Participants were asked to judge the quality of the trick. Half of the participants were told that the tricks were performed by Nathalie (i.e. a female character), and half by Nicolas (i.e. a male character). Our results showed that tricks allegedly performed by a woman (in fact, half of the tricks were performed by a woman and half by a man) were judged worse than those allegedly performed by a man, and this bias was independent of participants' sexism scores. We discuss these effects in terms of the perceptual biases that derive from stereotypes.

**16:30  Magical thinking and creativity in adults: Is there a relationship?**
Eugene Subbotsky & David Fougstedt; e.subbotsky@lancaster.ac.uk
While extensive studies were done of both magical thinking and creativity separately, the research on relationships between the two constructs has been scarce. This study attempted to establish whether there is a relation between magical thinking and creativity in adults. University art and science students, males and females, were tested on their tendency towards magical thinking, their beliefs in magic and then were given two tests on creativity: Drawing an impossible entity task and divergent thinking unusual uses task. There were no significant effects found on participants' magical beliefs. Results indicated that science student had a significantly stronger tendency towards magical thinking then art students. There were no gender differences on participants' tendency towards magical thinking. Males scored significantly higher on divergent thinking unusual uses task than females, but not on the drawing the impossible entity task. The results supported the expectation that magical thinking will be related to creativity, though this relation is conditioned by participants' education background. In art students stronger tendency towards magical thinking positively and significantly correlated with both measures on creativity, however, there was no such a relationship in science students. A possible explanation of this result is that science students predominantly practice magical thinking for fun and entertainment, whereas in art students their magical thinking can find a direct output into production of creative pieces of art.

**16:50  Methods from madness: Magic and the origin of experimental psychology**
Matt Tompkins; matthew.tompkins@psy.ox.ac.uk
On Sunday the 18th of November 1877, at 3pm in the afternoon, Wilhelm Wundt, who would go on to be known as the 'Father of Experimental Psychology,' joined hands with a group of academics and bore witness to series of 'miracles' in the presence of a visiting American spirit medium. Wundt was unconvinced by what he saw. However, a number of his esteemed colleagues, including world-renowned physicists Gustav Fechner, Wilhelm Weber, and Johann Zöllner, believed that the events they witnessed called for a complete revision of the fundamental laws of physics – a revision that could accommodate immortal fourth-dimensional spirit people. Wundt argued that the miracles were the result of deliberate deception—"jugglery"—or magic tricks. The resulting debate was not itself immortalized in any mainstream psychology textbooks, but, arguably, it did play a fundamental role in the subsequent emergence of Experimental Psychology as a formal scientific discipline. In this talk I will examine the reports of the allegedly miraculous experiments and arguments surrounding them before considering how these events influenced the ways that subsequent researchers have approached the study of magic and illusions.

# Poster Presentation Abstracts:
## Thursday, 31st August, 18:30-20:00

**1  What kind of magician's choice is more effective? An experiment**
Hiroki Ozono; hiroki.ozono@gmail.com
Magician's choice (Equivocation) is one of the most popular psychological techniques in Magic. In this technique, a magician asks a spectator to choose something, which is apparently free choice, but by changing the script after the choice, the magician can lead each choice to the same end result. As far as we know, there is no experimental data about what kind of Magician's choice is more effective. In this study, we prepared four video clips of a packet trick. In these clips, the magician puts a packet of cards and says, "Imagine that these are the four Aces." He pantomimes picking two cards and asks the first question. "Imagine that I have removed two same color Aces. Do you think they are the black ones or the red ones?" If the spectator says red, the magician remains the red Aces. Otherwise, the magician pantomimes discarding the black ones and picking red ones. Then, the magician asks the second question, "Please choose the Ace of diamond or Ace of heart." The magician changes his behavior (discarding the Ace of diamond or remaining the Ace of heart) according to the choice, and pantomimes putting the Ace of heart face up into the packet. Finally, the magician shows only the Ace of heart, which the spectator supposedly *freely chose*, it is faced up in the packet of four Aces. In sum, there are four conditions; discarding blacks and discarding diamond, discarding blacks and remaining heart, remaining reds and discarding diamond, remaining reds and remaining heart. One hundred and sixteen participants were shown one of the four clips and rated how magical the magic was and inferred the trick. We found that there were no differences for the rating of magicalness, but the inferences of the trick varied according to the conditions.

**2  The symmetry of deception: Predictability reduces attention toward symmetrical actions**
Anthony Barnhart; abarnhart@carthage.edu
Many magical deceptions encourage audience members to interpret incomplete information using assumptions constructed from experience with environmental regularities. One such regularity that seems to be exploited by magicians is symmetry. Magic effects like the Chicago Multiplying Balls, for example, rely on assumptions of symmetry applied to object perception (see Ekroll, Sayim, & Wagemans, 2017, *Perspectives on Psych. Science*). The current experiment explores a different form of symmetry: Symmetry of action. Magicians report that deceptive actions are more likely to evade detection if they are part of a symmetrical action sequence (Sankey, 2003, *Beyond Secrets*). One place where this symmetry of action has been stressed is in performance of a piece of sleight of hand known as the *top change*, wherein a playing card in one hand is covertly switched for the card on top of a deck held in the other hand. If the action underlying the switch is performed with mirror symmetry (i.e., the hand with a single card

approaches the deck and then the hand with the deck retreats in the same direction of motion following the switch), then the sleight may be more apt to evade detection. We tested this hypothesis by having participants watch a series of videos containing top changes that were either symmetrical or asymmetrical and asking them to press a button upon detecting a switch. Non-deceptive filler trials were added to accommodate this design. Indeed, participants were significantly slower to detect top changes in the symmetrical condition than in the asymmetrical condition, supporting the notion that the presence of symmetry encourages perceptual "filling in" and, consequently, reduced attentional deployment toward the deceptive actions.

### 3  The role of perceptual mechanisms in creating the illusion of levitation

Steffen Andersen, Anna Ring, Mats Svalebjørg, & Vebjørn Ekroll;
Vebjorn.Ekroll@uib.no

The magical illusion of levitation – i.e. the illusion that an object is floating in thin air – can be created in many ways. Invisible thread, obviously, is often used. But in many cases, the apparently levitating object is simply connected to a support which is completely hidden behind the levitating object itself. This method of producing the illusion of levitation is extremely effective. But why is this so? Why is it so difficult to imagine that there is something behind the levitating object that may support it? A recently described illusion of empty space called "amodal absence" [Ekroll et al., 2017, *Perspect. Psychol. Sci.*, 12(1), 91–106] may provide a plausible answer to this question. The basic phenomenon seems to be that one may – under specific circumstances  – experience a compelling illusion that the space behind an object in the foreground is empty. Importantly, it would seem that this illusion is produced by automatic and cognitively impenetrable perceptual mechanisms rather than by higher-level cognitive mechanisms. In purely logical terms, levitation and empty space are intimately related: To say that an object levitates is tantamount to saying that it is surrounded by empty space on all sides – also on the backside that is hidden from direct view. Thus, we reasoned that perceptual system might rely on this logical link to create perceptual representations of floating and non-floating (supported rest). Consistent with this hypothesis, we found that the illusion of magical floating could be produced by creating a perceptual illusion of empty space. Importantly, the illusion was experienced although the observers knew how the apparently floating object was supported, indicating that we are dealing with a cognitively impenetrable perceptual experience of floating. Thus, the surprising effectiveness of many levitation tricks may be due to a powerful perceptual illusion.

### 4  Plasticity of mental hand representation: The magic hand

Toni Galligan, Laura Mora, Gustav Kuhn, & Gianna Cocchini;
G.Cocchini@gold.ac.uk

Internal spatial body configurations are crucial to successfully interact with the environment and to experience our body as a three dimensional volumetric entity. These representations are highly malleable and are modulated by a multitude of afferent and motor information. Despite some studies reporting the impact of sensory and motor modulation on body representations, the long-term relationship between sensory information and mental representation of own body parts is still unclear. To this aim, we

investigated hand representation in a group of expert sleight of hand magicians and in a group of age matched adults naïve to magic (controls). Participants were asked to localise landmarks of their fingers when their hand position was congruent with the mental representation (Experiment 1) and when proprioceptive information was 'misleading' (Experiment 2). Magicians outperformed controls in both experiments, suggesting that extensive training in sleight of hand has a profound effect in refining hand representation. Moreover, the impact of training seems to have a high body-part specificity, with a maximum impact for those body sections used more prominently during the training. Interestingly, it seems that sleight of hand training can lead to a specific improvement of hand mental representation, which relies less on proprioceptive information.

### 5  Belief in the paranormal: Using pre-exposure warnings and alternative explanations to debunk magical event interpretation.

Keir Simmons, Christine Mohr, Cyril Thomas, & Gustav Kuhn;
Christine.Mohr@unil.ch

Studying belief in misinformation is becoming increasingly important, following the rise of "fake news" in recent months. One method that can be used to study this is belief in the paranormal. More specifically in this study, belief for a paranormal explanation of an event witnessed. The aim of this research was to look for an effective intervention to reduce people's belief in misinformation. Participants viewed a psychic demonstration of a man claiming to have psychic powers, after which they were asked to judge the extent to which they thought the demonstration had been achieved through psychic abilities or magic tricks. In experiment 1, participants were explicitly informed that the "psychic" used common magic tricks to create the illusion of psychic. Half of the participants received the instructions before the demonstration and half of them afterwards. Warning prior the witnessing the event had a limited effect, and was significantly less effective than when given post event. However, even though all participants were explicitly informed that the individual did not have genuine psychic abilities, a substantial proportion of people continued to attribute the demonstration to genuine psychic abilities. Participants' event interpretations also significantly correlated with their prior beliefs in the paranormal. In our second experiment participants will be given either a pre-exposure warning or an alternative explanation (from Lewandowski et al, 2012). We predict that the alternative explanation will significantly reduce belief in psychic powers more than being exposed to it before.

### 6  When the seductive power of magic overrides prospective risk – why would Pandora open the box?

Johnny King Lau, Anthony Haffey, Kei Kuratomi, Hiroki Ozono, Asuka Komiya, & Kou Murayama; johnny.lau@reading.ac.uk

We examined in the current study how curiosity biases decision-making, even in the face of physical risk (e.g. expecting electric stimulation), and evaluated the relevant underlying neural mechanisms using fMRI. To induce curiosity, we pilot-tested a set of videos of magic tricks performed by professional magicians. A magic trick is an event that appears impossible, thus an ideal material to create strong knowledge gap as a source of curiosity.

Inside a 3T scanner, participants were presented with magic trick videos (alongside the condition of food stimuli, using images of food). In every trial, participants were asked to rate how curious they were to know the solution to a trick, and then shown a wheel of fortune representing a lottery which visualized the probability of winning (and losing). They were asked to decide whether to gamble. If they gambled and won, they were provided with a ticket to see the solution. They were instructed that if they lost, they would receive a mild electric shock after the experiment. Participants could also opt to skip the lottery. According to generalised linear mixed-effects modelling analysis, heightened odds of expecting a reward, as well as curiosity (or attractiveness of the stimulus), increased individual's tendency to take risk. Neuroimaging analysis compared the BOLD signals of the 'accepted' and 'rejected' trials at the time of decision making. In particular the accepted (relative to rejected) trials were associated with greater striatal activity, commonly regarded as part of the brain's reward system.

## 7  Please clap and observe! The effect of audience presence on the experience of magic

Elisabeth Vaughan, Hugo Caffaratti, Cyril Thomas, & Gustav Kuhn; cyril.thomas@univ-fcomte.fr
Magic is one of the most enduring forms of entertainment, yet little is known about the psychological factors that influence our enjoyment and appreciation of this unique art form. The aim of our research was to explore whether two forms of social influences (audience applause, physical presence of other people) would increase our experience of magic. We focused on four psychological domains of experience a magic performance; enjoyment, wonder, impressiveness and engagement. In Experiment 1 participants watched two videos of a magic performance, one with audience effect (applause) and one without. Participants rated the magic tricks as significantly more impressive, and more enjoyable and engaging, as well as eliciting more wonder, when the magic performance included an audible applause, than when this was absent. In Experiment 2 participants watched a series of eight videos of a magician performing short magic routines, four with social presence (two bystanders) and four without. Participants rated the videos that included bystanders as significantly more engaging and enjoyable. Whilst the videos with the bystander also elicited somewhat more wonder and were more impressive, these differences were not statistically significant. We also used questionnaires to measure participants' social desirability, but none of our effects were modulated by this individual differences measure, suggesting that these audience effects are not simply due to social desirability. The present research provides novel insights into our experience of magic.

## 8  Don't do it again. Repeating the same trick reduces our magical experience!

Gustav Kuhn & Maximilian Pittas; mmore014@gold.ac.uk
Magic is one of the oldest art forms, yet we know very little about why people enjoy being tricked, nor do we fully understand the experience that these illusions elicit. We aimed to investigate two aspects of how people experience magic tricks; surprise and impossibility. One of the key rules in magic states that you should never repeat the same trick. Some of

our past research has revealed that repetition can significantly increase people's ability to detect the secret method (Kuhn & Tatler, 2005; Kuhn, Tatler, Findlay, & Cole, 2008), but little is known about how repetition influences our experience of magic. Our first aim was to investigate whether repetition of the same type of magic trick changes people's experience, by focusing on five psychological dimensions (wonder, enjoyment, surprise, "magicalness", impossibility). Our second aim was to investigate whether our subjective beliefs in the impossible influence our experience of magic. Shtulman and Morgan (in press) have recently shown that children and adults apply causal constraints on magical reasoning, which implies that certain impossible events are more impossible than others (e.g. it is more difficult to magically turn coal into gold than silver). We aimed to investigate some of these constraints in the domain of magic. Small groups of participants watched a magician as he magically transformed a five-pound note into a fifty-pound note, after which he reversed the transformation. One half of the participants saw the former transformation first and the others the latter; participants were asked to evaluate the trick after each performance. Our preliminary results found that repetition of the effect significantly reduced the magical experience in all five measures (wonder, enjoyment, surprise, "magicalness", impossibility). Our results in terms of plausible impossibility were less conclusive, but we will present additional data to answer this question more fully. Our results illustrate that surprise and expectations play an important role in our experience of magic.

## 9  Now you see it: The influence of misinformation on viewers' misperceptions of a dynamic visual scene

Matt Tompkins & Anne Aimola Davies; matthew.tompkins@psy.ox.ac.uk
We developed an experimental paradigm to investigate how magicians' misdirection techniques could be combined with exposure to misinformation to induce the misperception of "phantom" objects." Past experiments involving magic tricks methods have demonstrated that sleight-of-hand can create false impressions about the movement and even the presence of objects within dynamic visual scenes. Furthermore, there is a rich literature of experiments on memory and eye-witness testimony that have demonstrated that exposing viewers to false information of about visual scenes can influence their recollection of events— a phenomenon known as the misinformation effect. The present experiment uses the Phantom Vanish Magic Trick Paradigm to compare the effects of multiple misinformation conditions. Participants watched a silent video of a magician pantomiming the actions of making an object disappear—no object was ever really presented. Immediately after watching the video, the participants were asked to describe what they had seen. Participants were either exposed to (1) post-event misinformation in the form of leading question, (2) pre-event misinformation, (3) both pre - and post-event misinformation, or (4) no misinformation. Our results indicate that exposure to misinformation can significantly influence participants' descriptions of a dynamic visual scene, even when they are asked to describe the scene immediately after witnessing it.

## 10  The Prestige: Why disappearing object must always reappear

Hugo Caffaratti, Cyril Thomas, & Gustav Kuhn; cyril.thomas@univ-fcomte.fr

Magic relies on exploiting counter-intuitive errors, biases, and illusions in cognition and one of the most surprising illusions relates to the amount we consciously perceive. Whilst we intuitively believe that we are fully aware of our surroundings, our conscious representation is much more sparse than this illusory experience would suggest. Back in 1890 William James noted that each time we attend to an object, it suddenly appears in our conscious awareness. Indeed, in every moment of our wakeful lives new objects appear in our awareness. Whilst it is easy for objects to appear, it is much harder for them to disappear. From an early age, we learn that objects that are no longer visible remain in existence, a phenomenon known as object permanence. In magic there is also a asymmetrical relationship between making objects appear and disappear. Whilst magicians frequently make an object appear from thin air, it is very rare for them vanish an object without making it reappear; a phenomenon known as the Prestige. We present empirical data exploring the psychological mechanisms that underpin the Prestige. In experiment 1 we show that people expect an object that has magically "disappeared" to reappear, and that they are far more fulfilled by seeing an effect that includes the Prestige, than when the object simply disappears. We have previously shown (Caffaratti, Navajas, Rey, & Quian Quiroga, 2016) that when participants imply that a ball has been removed from a cup, and hidden from view (i.e. under the table), people do not expect it to reappear underneath a cup. Even after viewing 200 "trick sequences" participants continuously underestimated the probability by which the ball appeared under the cup. In a new experiment, we will present data that investigates people's short and long-term expectancies as to whether the ball appears under the cup or not, as a function of whether it "magically" disappears or physically disappears (i.e. ball is simply out of view). We predict that participants should be more likely to anticipate that the ball appears under the cup in the former (magically disappear) than latter condition (physically disappear) condition.

## 11  Influence of the credibility of source on the mind fixing effect: A socio-cognitive approach of insight problem solving

Morgan Begey, André Didierjean, & Cyril Thomas; cyril.thomas@univ-fcomte.fr

Previous research on problem solving has shown that familiar ideas can prevent participants from finding better alternatives. More recently, Thomas and Didierjeean (2016) have demonstrated that during a magic trick, an unfamiliar and unlikely false solution ("I can influence your choice with my gestures), could prevents participants from discovering a more likely alternative ("all the cards are the same"). The goal of the present study was to investigate the impact of the credibility of the source (skilful magician Vs clumsy magician) on the robustness of this fixing effect. We used the same trick as the one use in Thomas and Didierjean (2016) study. One group of participant was exposed to a condition in which the experimenter was primed as talented (he did a skilful manipulation with the cards) and credible as a magician. The second group was exposed to a condition in which the experimenter was primed as clumsy (he "accidently" dropped the cards on the table) and not credible as a magician. Our main results replicates Thomas and Didierjean (2016) results: the false solution prevents most of the participants from finding the secret of the trick. However, when the magician affirms that the false solution is not the secret of the trick, most of them succeed to find the real secret of the trick. However, our results failed to show any significant differences between the two groups (credible magician Vs non credible magician). Despite this non-significance, a strong tendency nominate the credible magician as a better candidate to fix participants mind. We discussed on future directions to better evaluate the influence of the experimenter credibility on this kind of fixing effect.

## 12  I know who you are! Social influence on sensitivity to subtle factors, using magic and mentalism tricks.

Alice Pailhès; alice.pailhes@gmail.com

According to Morchain and Schadron and their concept of the "social determinability" (1999, 2001), the more we think someone else is able to judge us in a situation, the more sensitive we become to different influences present in this situation. The magicians' techniques of forcing, which consist in subtly influencing a spectator's choice, deliver a fine and ecological way to explore this concept. The current research examines how making participants believe the experimenter has information on his personality - either by an alleged "personality survey" or a specific sentence pronounced by the experimenter – impacts the success rate of two forcing techniques. We hypothesized that the participants who thought they answered a survey predictive of their personality before the trick would choose more often the target card than when the trick was performed alone. The same hypothesis was made for the effect of a specific sentence pronounced by the experimenter before the trick, making participants believe she had skills to evaluate their personality. The first study used a visual riffle forcing technique, which has already been looked into in a context of studying the feeling of free-will (Shalom et al 2013) and personality predictors (Olson et al 2015). The second study involved a mentalism trick, using a psychological forcing called "mental force" (Brown, 2000), in which the experimenter asked the participants to let a card come to their mind, and influenced them with the help of subtle gestures. Logistics regressions showed no significant results for both studies. However, some more exploratory regressions showed unexpected effects such as the gender of the participants and the interaction between the sentence and the survey on the chosen value of the card (study 1), or the effect of the survey on the chosen suite (study 2). These results provide a first insight into the complexity of the effect of social context and beliefs on the impact of subtle influences.

## 13  It is magic! How impossible solutions prevent the discovery of obvious ones?

Cyril Thomas, André Didierjean, & Gustav Kuhn; cyril.thomas@univ-fcomte.fr

When confronted with an insight problem, some factors limit our capacity to discover the optimal solution. Previous research on problem solving has shown that familiar, and unfamiliar/non-intuitive ideas can prevent participants from finding better alternatives. We used magic tricks to demonstrate that this mind fixing effect is more robust than previously thought: a solution that participants known to be wrong prevents the discovery of an alternative, even if they know that another solution must exist. In two experiments we show that a simple exposure to an intuitive and self-generated false solution (e.g., the

magician hides the card in the palm of his hand to secretly transfer it to his back pocket) can prevent participants from finding the real secret of the trick (e.g., he used a duplicate card), even if the magician proves that this false solution is impossible (e.g., he shows his hand is empty). In Experiment 1, this effect was observed when the false solution is ruled out after the effect of the trick. In Experiment 2, the effect was observed in another magic trick even when the false solution is ruled out before the effect. We discussed of the psychological processes underlying this robust fixing effect.

### 14  Not so creative after all: The investigation of the dark triad in conducting insight problem solving using classic and magic problems.

Velvetina Lim Siu Ching, Gordon Wright, & Gustav Kuhn; svelv001@gold.ac.uk
Dark Personalities frequently carry out deviant behaviour in their daily lives and often need to find creative ways to get away with it. It has therefore been suggested that these individuals are more creative, which improves their problem solving abilities. However, whilst there is much theoretical speculation about this relationship, the empirical research supporting it is mixed. This empirical study investigated the relationship between dark personality and creativity using a novel experimental paradigm. We sought to empirically examine the relationship between insight problem solving and dark triad personality traits (Psychopathy, Machiavellianism and Narcissism), using traditional insight problem solving tasks, as well as their ability to discover the deceptive method magicians use to create their magical effect. In this regard we presented participants with a number of magic tricks, and they were asked to discover how the trick was done, and report whether they discovered the secret through insight. This allowed us to examine whether individual who score high on the dark personality engage in more insight problem solving. This study also allowed us to compare participants' performances on these two different types of tasks. A sample of 117 participants completed a range of psychometric measures to assess for the dark triad personality facets. Insight levels were measured through two forms of assessments: static presentations of classic insight problems (N=9) and dynamic presentations of magic tricks (N=8). Preliminary analyses suggest that high primary psychopathy levels (manipulative and callous tendencies) were weakly negatively correlated to the experience of insight and with the ability to problem solve during the magic trick condition. Across the board however, insight experiences from magic tricks was significantly related and contributed to 49% of the variance of insight experiences from classical problems. This suggests that individuals high in dark triad personality traits are not predisposed with higher levels of insight, and hence may not be more creative as theoretically suggested. Additionally, the novel measure of using magic tricks as an insight measure may be useful.

### 15  To cast a spell

Callum Copley; callum.copley@gmail.com
The text of an instant message appears as a two dimensional object on a screen, yet its meaning is not static – it is rather intimately tied to the speed with which it is typed and the frequency with which the enter button is hit. The written word becomes imbued with a temporality never afforded to it on a printed page. As Sociolinguistic Barbara Kirshenblatt-Gimblett notes "The words on the screen neither precede nor follow speech, though they often feel more like talking than writing. Electronic messages are neither a playscript nor a transcript, particularly in the interactive chat programs. They are the event." Synchronous dialogue online exists in a sort of space-time discontinuum, it is a semi-immediate form of talking, in which every line can be revised until it is sent. When considering the relationship between language and magic, writer Alan Moore states "Art is, like magic, is the science of manipulating symbols, words or images to archive changes in consciousness. The very language of magic seems to be talking as much about writing or art as it is about supernatural events. A Grimoire for example, the book of spells is simply a way of saying grammar. Indeed, to cast a spell is simply to spell, to manipulate words, to change people's consciousness." Taking this proposition – that the simple formulation of language is itself the fundamental basis of magic – I wish to explore how emerging technology is manipulating the metaphysics of our experiences online and compounding the 'magical qualities' already inherent in written communication. As the artistic genre of 'magic realism' finds growing popularity (a genre characterised by the pervasion of supernatural or fantastical elements into an otherwise realistic situation) I intend to show how a form of real magic exists in the commonplace act of digital communication.

### 16  Tricking the eye of the motivated beholder: The utility of language in magic performance

Kevin L. Ladd, Kyle J. Messick, & Blanca Aranda; kladd@iusb.edu
Generations of writings assert that a key component of success in performing magic is the use of language (patter) to redirect spectator attention away from subtle, discrete movements. Existing literature demonstrates that language draws attention to a speaker's eyes, but those investigations have occurred primarily under conditions of motivated listeners. In the performance of magic, viewers are highly motivated to attend to bodily movement rather than patter in order to discover the method behind the magical effect. Under these conditions, can language be sufficiently strong to move a spectator's gaze? Using eye tracking methods and a magically naïve sample ($N = 20$), we explored how the presence or absence of patter influenced gaze patterns during two common hand-oriented magic routines (cups and balls; coin transposition). Results show that when observers heard the magician speaking, their attention targeted the facial region, however, when there was no sound, gaze focused on hand movements. In this instance, the folk psychology of magicians is endorsed. The use of patter makes a considerable difference in "hiding in plain sight" the actions necessary to create a magical effect. Future research will investigate the extent to which the patter's quality (e.g., story-like vs descriptive) has an additional level of influence.

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## The Next Meeting of SOMA

SOMA will next convene in Summer 2019 in Milwaukee, Wisconsin, USA. Follow @Sci_Magic_Assoc on Twitter and monitor www.scienceofmagicassociation.org for details!

<u>Thoughtful Notes</u>