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## It's (Not) The Real Thing

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# Acknowledgements

# Introduction

> "…whether or not we become cognizant of the illusion depends upon the ease with which the exceptional character of the particular instance can be recognized, or the inference to which it leads be opposed by presumably more reliable evidence."
>
> **(Jastrow, 1888, p. 147)**

Thirty men and women in military uniforms sit at desks in front of me. Most of them lean forwards slightly, eyeing me up expectantly. Behind me, large red letters spell out the words "A Demonstration of Influence" on a projector screen. In my hands is a deck of cards. I ask a young naval officer if he would mind joining me at the front of the classroom; I hand him the deck, ask him to inspect it, and when he is happy, request that he shuffles it thoroughly. I take back the deck and give it another shuffle, then casually place it on the table in front of us. I ask the officer to cut the deck into two piles, and I then put one pile across the top of the other, telling the officer that I will just mark the location to which he cut. I ask him if he believes that I could have influenced the card to which he cut in the deck? Given that his Naval job role includes the word 'Influence', I am genuinely interested in his answer: "You study this stuff, so… probably. I'd still be impressed, though." I inform the audience that I was trying to get the officer to cut to the two of spades. I take the card he cut to from the deck and show it to the audience, revealing that the officer did indeed cut to the two of spades. Unexpectedly, the audience bursts into applause and an excited buzz swells rapidly in volume, pairs of heads leaning-in to start exchanging theories. Ironically, I note, I need to raise my voice to request silence. I then ask the audience, as individuals, and without

conferring, to spend a couple of minutes trying to establish in as much detail as possible the methods used to enable the effect. And so begins the counter-deception course.

You will no doubt recognise the above description as little more than a poorly performed cross-cut force, one that is entirely lacking in subtlety, narrative, or style. We shall venture back into the classroom later, and I shall explain what is happening, why this performance of the cross-cut force is so bad, and what happens next. I shall also outline how insights gained from many years of conducting this exercise may help improve the deceptiveness of your magic. But to begin, let us first consider some counter-deception theory.

# All Deception and All Magic is Imperfect

In a formerly classified intelligence report from 1942 that discusses the workings of German radar, the physicist and intelligence theorist Reginald Victor Jones asserted a principle that has since become a bedrock of counter-deception theory. Jones stated that:

> "No imitation can be perfect without being the real thing."
>
> **(Jones, 1942)**

This cardinal principle asserts that every effort to hide the real or to show the false has to contain at least one imperfection. The principle applies to all deception, including deception within magic, which means that every simulation of an impossible event is itself inherently imperfect. Imperfections exist as a result of the compromises necessary to simulate a false reality, including within simulated, disguised, or covert movement, and within gaffed, modified, or simulated objects. As a result, your simulated ripping of a card into quarters and then restoring it is imperfect. Your pass is imperfect. Your coin vanish is imperfect. And your simulated revelation of a spectator's thought-of number is also imperfect. If any of these activities were perfect, then magic would necessarily be real. As a magician, you have no choice in

the matter - imperfections will always be present within every effect, and you can never eliminate them entirely from your performance.

In a magic effect, imperfections constitute risks that the effect will fail. Accordingly, the effect design process must ensure that such imperfections are addressed and managed explicitly. Imperfections can, at least in principle, always be detected by a spectator - if they look in the right place, in the right way, and at the right time. Spotting an imperfection may trigger the spectator's suspicion, leading them to realise that an object or action is not as it should be, thereby increasing their vigilance for the remainder of the performance. The spectator's suspicion can potentially cascade throughout the remainder of the effect, leading the deception to unravel in their mind completely.

Critical challenges for those working in counter-deception (i.e. those whose job involves spotting and managing others' deception) therefore involve knowing where to look, how to look, and when to look so that a deceiver's imperfections might be detected. And the challenge for those that employ deception professionally, including magicians, is to manage and control the imperfections that their craft necessarily entails.

In his book, Pure Effect (Brown, n.d., pp. 101-105), Derren Brown insightfully discusses the notion of 'Invisible Compromise'. When describing the design of a mindreading effect, he states:

> "I decided to start with the highest ideals and see how far I could move towards them without compromising on those aspects of the performance tangible or visible to the audience… Compromise can come later, but not where it will be visible to the audience."
> **(Brown, n.d., pp. 101-105)**

Brown's examples of 'visible compromise' include books, pieces of paper and alphabet cards, and 'invisible compromise' includes pre-show work, transmitter equipment, and the advantageous

positioning of spectators on stage. Brown's understanding of the nature of compromise and his strategies for managing it constitute one effective response to Jones's principle. However, I would suggest that the very notion of invisible compromise is, in both principle and practice, impossible. Compromises can never be made 'invisible' and relocating a compromise to where there is less chance of detection does not render it so. Relocation means that the compromise still exists, it still has the potential to be detected by the spectator (or others), and it most likely introduces other compromises that can similarly be detected or cause the effect to unravel. For example, pre-show work may introduce new compromises via the introduction of unnatural or ambiguous language required for spectator management. Transmitters may necessitate additional actions, for example, having to move a card box out the way that contains a receiver, to take a glance at it. And spectator positioning on stage may necessitate compromises such as requiring a spectator to close their eyes, or the performer having to simulate unnatural actions, such as waving their hands near a spectator to supposedly 'cleanse' their 'aura', etc. Also, it may prove impossible to relocate a compromise, so other management strategies become essential.

Having identified that imperfections are always present in any case of deception, we shall next consider a case from outside of magic, where deceptive compromise and imperfection led the effect to unravel.

# Discrepancies and Dowels

In 2012, Syrian opposition fighters released a video on YouTube announcing the formation of a special forces brigade that was joining the battle against President Bashar al-Assad (Chivers, 2012). The video featured eleven men dressed in black, each with his face hidden behind a ski mask or cloth, posing with modified Heckler & Koch MP-5 submachine guns (a weapon commonly used by counter-terrorism teams). In front of banners of the Free Syrian Army (the loose confederation of anti-Assad fighters) one man in the group

read a statement declaring the fight "in the service of God" against Mr Assad's "criminal regime". The scene served to project menace and resolve.

The video increasingly gathered traction online until it happened to be seen by Jonathan Ferguson, Keeper of Firearms & Artillery at the National Firearms Centre in Leeds. When he first saw the video, Ferguson instantly sensed that there was something odd about it. Further viewings led him to notice that each man's left hand was holding their gun in the same location on its barrel, which was an unusual location for one person to be holding their weapon, never mind all eleven. A frame grab from the video that shows this is available at bit.ly/2X5gnQA

Ferguson's gut-feel that there was something odd about the video prompted him to review it in greater detail, leading him to discover that other parts of the weapons were also slightly out of proportion. An online search revealed that the men were each holding a TD-2007, a Chinese-made toy replica of the MP-5 marketed as appropriate for children above the age of 5. This revelation enabled him to identify that the toys had had a length of dowel or pipe attached to the barrels to make them look longer, in an attempt to simulate the look of the counter-terrorism version of the weapon. The men in the video were holding their 'guns' oddly to cover-up the home-made joins.

As in all deception, the simulation portrayed in the video was imperfect. It included one anomaly that was initially detected by Ferguson via gut-feel (the fighter's hands were all in the same, unusual, position on their weapons) which in turn increased his vigilance and degree of scrutiny. His increased scrutiny led him to detect another imperfection (weapon parts were out of proportion), and further study of these imperfections eventually led the entire deception to collapse.

As we shall see, these processes of noticing and attending to gut-feel, detection of imperfections, and exploration of suspicion can also enable a spectator to unravel any magic effect.

| Types of Anomaly That May Indicate the Presence of Deception |
|---|
| 1. An unexpected or puzzling presence of something. |
| 2. An unexpected or puzzling absence of something. |
| 3. Things that don't fit or link together naturally. |
| 4. An unusual consistency or inconsistency. |
| 5. Something being 'too perfect'. |
| 6. The strong presentation or promotion of some features above others, over-compensation, or over-justification. |
| 7. Denial of means and opportunity to observe certain features. |
| 8. Something in an unusual location. |
| 9. Unexpected, strange, or puzzling movements. |
| 10. Unusual temporality or changes in pace or timing. |

Table 1 - Deception anomalies

## Types of Anomaly

The imperfections inherent within deception present themselves as incongruities or anomalies. An incongruity is an incompatibility; an anomaly is a deviation from what is considered normal. Please note that for brevity, the term anomaly will be used synonymously throughout the remainder of this article to refer to both forms of imperfection.

Stech and Elsaesser (2004) identify around 25 different types of anomaly that, if present, may indicate the presence of deception. To their list, I would add at least another 15 types that I have encountered in my work. Types of anomaly include those shown in Table 1.

In the Syrian opposition video, all the men had their hands in the same location on their weapon (an unusual consistency), and this location was a strange place to be holding the weapon (an unusual location). The positioning of their hands covered-up the join between the barrel of the toy and the attached dowel or pipe (denial of

| Anomalies in Beginner's Double Lift | Anomalies in Push-Off Double Lift |
|---|---|
| 1. Performer nervously alternates glancing between the spectator and the deck. | 1. The slightly different way that the cards spread and move away from the deck during the push-off. |
| 2. Performer riffles the rear of the deck with their thumb (creating an audible anomaly). | 2. The altered grip used to prevent double from splitting during turnover. |
| 3. Performer bevels the rear of the deck. | 3. 'Card' has double thickness. |
| 4. Performer lifts multiple cards with their thumb to get the double. | 4. [Possible retention of break under double when displaying.] |
| 5. Performer transfers the break to their pinky (possibly involving additional movement and audio as the double flicks down onto their pinky). | 5. Repetition of altered grip to prevent splitting during the second turnover. |
| 6. Fingers reach unnaturally into the deck below the double. | |
| 7. The grip of the card is unnatural (to stop it splitting) during turnover. | |
| 8. 'Card' has double thickness. | |
| 9. Another break is held whilst displaying the double on top of the deck. | |
| 10. Fingers again move into the deck below the double to flip it back down. | |
| 11. The grip of the card is again unnatural (to stop it splitting) during the second turnover. | |

Table 2 - Comparison of anomalies in two approaches to the Double Lift

opportunity to observe certain features) and the weapons also featured parts that were out of proportion (an unusual inconsistency).

A critical consideration for designers of deceptive action is that the deceptive methods selected to achieve an effect determine directly the number and the size of the anomalies introduced. In the context of magic, consider the difference between a "beginner's" double lift in comparison to a more nuanced push-off version, as shown in Table 2.

The description for each version of the sleight is highly dependent upon both the degree to which one decomposes the sleight and the vagaries inherent in the English language. Irrespective of the descriptions presented, the number and the conspicuity of the anomalies in each

version is radically different - the push-off double containing far fewer and less conspicuous anomalies.

Note that the term 'conspicuity' refers here to the property of attracting attention.

It is essential to recognise that anomalies may exist in any sensory form and are not limited to visual channels. For example, as the magician executes a false in-hand riffle shuffle, the spectator may notice that the collapse of the bridge makes more of a 'clicky' sound (due to the covert breaking of the weave) in comparison to the usual 'whooshy' sound (as the air gets squeezed from between the cards during the collapse). The spectator may detect that the magician's hand smells strongly of aftershave as he waves it in front of their face, leading them to fixate on this fact and momentarily struggle to recall the card they

had previously selected. The spoon feels noticeably lightweight and 'cheap' to the spectator when they pick it up, shortly before it appears to bend between the magician's fingers. And the liquid they swig from the vinegar bottle whilst apparently 'hypnotised' tastes like flat coke.

These examples are all glaring; however, as we shall see, spectators are capable of consciously and unconsciously detecting even very subtle anomalies.

## What is Gut-feel?

Joseph Jastrow, one of the founding fathers of modern psychology, developed his theories of perception and belief based on the study of magicians. Jastrow suggested that:

> "…the only complete safeguard against being deceived by [magic tricks] is the acquisition of the purely technical knowledge that underlies their success…"
>
> **(Jastrow, 1888, p. 148)**

While technical knowledge of magic tricks does provide a safeguard against being deceived by them (see research by Quarona et al., 2020), I would suggest that this is not the only safeguard and that it can ever be a complete safeguard. New modes and methods for applying old principles appear continuously, and it is easy for existing knowledge to become out of date rapidly. An experienced observer, irrespective of their level of technical expertise, is still vulnerable to strong misdirection due to their biological hardwiring, or they may simply fail to notice critical actions. Technical knowledge can be challenging to apply in the face of powerful and novel artistic performance. And magicians may also seek intentionally to turn other magician's experience against them, for example, misdirecting them by simulating one well-known sleight which is later ruled-out in the effect.

Erdnase offers an alternative view to Jastrow, suggesting that:

> "An intimate acquaintance with the modus operandi of card-table artifice does not necessarily enable one to detect the manipulation, but it certainly makes plain the chances to be guarded against…"
>
> **(Erdnase, 1902, pp. xii-xiii)**

In other words, possessing technical knowledge about magic lessens, but does not eliminate, the possibility that someone else's performance will fool an experienced magician.

Whilst members of the public are generally not familiar with magic routines and sleights, they, nonetheless, are still able to detect when something is not 'right', or when something unusual is happening. Our experience provides us with a sense of prototypicality - knowing what is typical, usual, or normal in a given situation. Anomalies are situational features that do not fit into the patterns with which we are familiar. We may pick up on these inconsistencies either consciously (i.e. we actively notice and are aware that something is amiss) or unconsciously (i.e. we develop a gut-feel that something is somehow off).

Gut-feel may present itself as an intuitive sense of unease, self-doubt, suspicion, oddness, puzzlement, or curiosity. Whaley and Busby (2002) suggest that such intuition underpins all counter-deception, and that:

> "The essence of [counter-deception] is to force one to confront straight on that nagging, almost subliminal sense of unease about a situation or person that somehow does not seem quite right, that does not quite fit as it should, those little incongruities that signal a deception is in progress."
>
> **(Whaley & Busby, 2002, p. 217)**

The use of a pass to exchange two halves of a deck is a compromise of reality that is necessary to achieve the illusion of certain impossible events. The sleight, in all of its multiple variations, is riddled with anomalies. A spectator who is not familiar with magic will have no idea what a pass is, will not be anticipating its use, and would likely not recognise it or understand its function should they notice it during its execution. Nonetheless, when the

performer executes a pass, the spectator may still detect that something odd is occurring, even if they don't know precisely what the source of their suspicion is. This may be due to the spectator consciously or unconsciously noticing the performer's change of grip, they may pick up on a difference in the performer's level of tension just before the move, or they may spot movements associated with the execution of the sleight (such as movement in the deck, the magician's hands or arms, a change in the performer's body posture or orientation, or even changes in where the performer orientates their head or eyes).

Magic relies upon the use of everyday objects, common understanding of causality, and familiar types of movement, behaviour, and speech, all of which occur in regular patterns. The compromises of reality necessary to enable the simulation of impossible events create anomalies in these patterns. Thus, such anomalies may consciously or unconsciously be detected by spectators who do not have knowledge or experience of magic. The phenomenon of spectators unconsciously detecting the moves that enable a magic effect has been demonstrated experimentally by a variety of researchers that study magic, including Kuhn and Land (2006) and Kawakami and Miura (2017).

However, as we shall see shortly, one of the significant advantages that magicians have over spectators is that for much of the time, spectators are incredibly inattentive.

## The Active Stance

The intent with the classroom exercise described earlier was to use a simple magic effect to teach the principles of counter-deception. I wanted to use a short, simple routine, that would contain a good range of anomalies to prompt and support a productive classroom discussion. I opted to use a cross-cut force, and in initial iterations of the course I performed this quite subtly (for example, glancing the top card, getting the spectator to do the entire cutting and placing, etc.). However, the anomalies turned-out to be far too low-key to be of practical use for enabling teaching points to be drawn out, as (a) students

couldn't spot them, (b) students couldn't later remember them occurring and were unable to refer back to them, and (c) they took too long to explain and demonstrate. As a result, I ended up using, amplifying, and grossly exaggerating more blatant anomalies, thereby making them more accessible for students to detect, remember, and to later reference. It is for this reason that the cross-cut force described earlier was (deliberately) performed so poorly. The performance included the following features:

- The words 'A Demonstration of Influence' are projected onto a screen and remain there for the duration of the performance (rather than being referred to verbally, in passing). The projection enables a discussion of framing, and how it influences what we attend to and notice (for example, spectators' expectations regarding my use of influence lead them to pay more attention to my words than to my actions, etc.).

- After the spectator has shuffled the deck, I take it back, blatantly glimpse the bottom card, and make a deliberate point of shuffling it to the top of the deck. This action occurs in preference to a more subtle process of glimpsing the bottom card and using this as the revelation (e.g. see Earl, 2018, pp. 6-7), or glimpsing and using the top card.

- I use the conspicuous, and entirely nonsensical expression "I'll just mark where you cut to", and myself place, in an exaggerated manner, one half of the deck on top of the other, rather than allow the spectator to do this for themselves.

- The temporal misdirection after the placing of the halves of the deck is overly long and drawn-out. It involves asking the spectator about how and where they decided to cut the deck, whether they felt any cards sticking to their fingers, and whether they think behavioural influence is possible in reality.

- I exaggerate miming the removal of the force card from the middle of the deck (rather than ask the spectator to reveal it) and make a show of placing the top half of the deck back on the bottom half.

- Of course, many other less apparent anomalies arise throughout the performance, such as the naming of the 'influenced' card after the shuffling and cutting are complete, and not at the outset of the routine, etc.

Despite the magnitude of these anomalies, I was shocked to discover that in almost every class, students would fail to notice that there was anything strange, unusual, or nonsensical occurring. This experience undoubtedly taught me as much about the psychology of attention as anything I ever taught the students!

Humans spend much of their time effectively running on autopilot. Their thought patterns follow regular routines, and their attention accordingly follows well-trodden paths. Attentional and cognitive resources become occupied with mulling-over current topics of interest, speculating about the future, and engaging in meditative acts of reverie and imagination. When attentional and cognitive resources become focussed internally in this way, there is less resource available for deployment externally, studying, absorbing, and critiquing the infinite and richly detailed information that is available from the environment. People in this mode of thinking and attending are in a 'Passive Stance'.

The reason why students failed to spot any anomalies in the exaggerated exercise is that they initially view the performance in this Passive Stance, as opposed to taking an Active Stance. An Active Stance is an intentional modality in which an individual becomes conscientious and highly deliberative about how they attend to and think about the environment. They enter a heightened state of self-awareness and curiosity, with high levels of motivation and an intention to 'drink-up' the richness and detail available from the environment. In an Active Stance, an individual is aware of the need to remember in detail what they are about to observe so that later they can recall events accurately. Somebody in an Active Stance employs hyperacuity, intentionally noticing tiny details in the environment around them. In the Active Stance, an individual notionally possesses 'hungry eyes', and often their eyes may genuinely open wider, enabling more abundant and detailed information (including anomalies) to be detected and registered.

However, maintaining an Active Stance comes at a cost. The stance is cognitively taxing, and attention is a finite resource. Activating the Active Stance is therefore only feasible for short periods, so another challenge for counter-deception practitioners is knowing when to engage and to disengage the stance. Conversely, magicians will wish to prevent spectators from adopting an Active Stance or want them to adopt it at the wrong times.

## What Makes Anomalies Conspicuous?

If a spectator looks in the right place, at the right time, and in the right way, then they stand a good chance of spotting anomalies that may alert them to the presence of deception (or at the very least, that there is something suspicious happening).

Our sensors are attracted by, drawn towards, and seduced by any stimulus in the environment that exhibits conspicuity (the property of attracting attention). This type of attention is known as bottom-up attention or attracted attention.

A variety of factors determine conspicuity, including:

- **Position.** We attend to things that we find out of place, that have an inconsistent location, or that we encounter in unexpected situations.

- **Intensity.** We attend to things that are bright, strong, and bold.

- **Novelty.** We notice things that are strange, unexpected, surprising, etc.

- **Contrast.** We notice things that are different from their background, or that are different from the other things around them.

- **Movement.** We notice dynamic things that change their location, position, orientation, size, shape, configuration, etc.

- **Absence.** We notice when things are missing or when there are 'visual gaps'.

- **Repetition.** Repeated observations of an object or action will increasingly make that object or action stand-out to us. Eventually, we become desensitized, paying less attention at each inspection, and ultimately no attention at all.

- **Size.** We tend to notice more readily larger things over smaller things.

These characteristics can be amplified or made more prominent to attract a target's attention. The characteristics can also be attenuated or made smaller to reduce or avoid a target's attention. These manipulations are thus central to many different forms of misdirection. However, the characteristics also enable the evaluation of emergent anomalies and provide opportunities for their attenuation.

In addition to conspicuity acting to seduce our attention, we also consciously, or without awareness, orientate our attention to where we anticipate something interesting will occur. This form of attention is referred to as directed, top-down, or motivated attention. We form expectations about the future based on mental simulation, in which we mentally play through a film-clip of how we anticipate the current situation to evolve. Our attention is also affected significantly by where others direct their attention, as this achieves economy of effort (i.e. if someone else is looking at something, it may be worth our while to look at it too). This phenomenon is well known to all magicians, and the use of one's attention to direct the spectator's attention is a bedrock of spatial misdirection.

Attention is also affected by saliency, wherein we are strongly inclined to notice things that are already at the forefront of our mind if they are present in the environment. For example, if we are thinking about buying a new car, we tend to notice and attend to all models of that same car that we pass whilst out driving. Salient objects and events stand out to us in a way that other objects and events do not. Counter to this, objects and actions that are not salient can be extremely challenging to detect, even when we stare directly at them. Being engaged mentally in a task amplifies this effect and can lead to one form of inattentional blindness, as exemplified in the well-known 'invisible gorilla' illusion (Simons & Chabris, 1999).

Given that our students earlier failed to detect the glaring anomalies in the first performance of the effect, what methods did they think enabled the effect?

# Spectators, Suspicions, and Solutions

After the students have had an opportunity to reflect on this performance of the cross-cut force, I ask for a show of hands to indicate their confidence about the underlying methodology, using the following categories:

- **Total, absolute and unadulterated certainty.** Over the years that I have been running this exercise and the hundreds of students I have taught, I have only ever had one student raise their hand at this point. It transpired that they had watched lots of explanation/exposure videos on YouTube and were familiar with the cross-cut force.

- **No idea.** Usually, about one half to two-thirds of students raise their hands.

· **Some suspicion.** Usually, about half of the group raise their hands (this often includes individuals who previously raised their hands for 'No idea', once they see other people raising their hands for this category). This proportion perhaps seems high, even accounting for how significant the anomalies are, and especially given that it later transpires that they did not spot the anomalies. However, given the professional setting and what these students do for a living, the impact of military rank, plus the effects of saving face, group conformity and peer-pressure, etc., this is perhaps not in the least surprising. If I ask students to keep their hands raised if they would be prepared to explain their solution to the class, a fair number of hands usually drop.

It is also important to note that having a suspicion as to the methods used to achieve the effect does not mean that this suspicion is correct.

When I ask students for their solutions, I often get responses such as:

· "Is it a special pack?"

· "Does the pack always cut by itself to the same card?"

· "Is one of the cards sticky so they'll always cut to it?"

· "Is the card they cut to somehow different from the rest of the cards?"

· "Are the cards marked so you can see what they cut to?"

· "Did you swap the pack for one where the cards are all the same?"

· "Did you tell him earlier which card to say?"

· "Is it based on probability?"

These are all (more or less) viable mean to achieve the effect, despite being incorrect. And these answers afford a range of valuable insights.

· The answers illustrate spectators' rudimentary awareness of possible magical methods and devices, such as one-way decks, marked decks, deck switches, crimps, pre-show, etc.

· Despite there being a range of potential solutions, it is interesting that no student has ever complained about the categories I provide for raising their hands. For example, no student has ever asked why there is no category for 'I can see multiple potential ways to achieve the effect, but I don't know which specific method you employed.' Having multiple methods available to accomplish the same outcome creates significant deceptive opportunities for magicians, as it does for deceivers working in other domains.

· Importantly, spectators leap to solutions that, had they been employed, would likely entail more conspicuous anomalies (such as a one-way deck) and that therefore potentially carry higher levels of risk compared to the use of subtler, more psychological approaches. This finding suggests the advantage of subtlety and psychology over technical methods when designing an effect.

After this first exercise is complete, students then learn:

· How to formulate and adopt an Active Stance.

· The application of hyperacuity, and how to detect and perceive environmental features more readily and more accurately (this involves an exercise in which they critique works of art).

· How to remember what they saw and what was present in the environment.

· The development of self-awareness regards one's attentional and sensemaking processes.

· How to interpret and make sense of anomalies that are detected.

Students next watch a repeat performance of the cross-cut force, this time adopting an Active Stance and intentionally seeking to detect any anomalies that may be present. During this second iteration, I attempt to replicate as accurately as possible the first cross-cut force exercise. I employ the same spectator, use verbatim patter, and I replicate all of my previous movements. I then ask the students to describe the anomalies they spotted.

This second viewing is, almost without fail, a revelation to students, and they cannot believe that they did not spot the glaring anomalies when they first watched the performance. They see and hear puzzling aspects of the performance that make no sense or that are blatantly 'wrong', and typically they detect most, if not all, of the anomalies present.

This second run-through benefits significantly from the repetition. Students now know what is coming and are also looking out for things that (with the benefit of hindsight) may strike them as strange when they recall the first exercise. Nonetheless, they view the second performance in an entirely different way and move from passive recipients of what they are provided with, to become active searchers for and creators of meaning.

Following the repeat performance, students discuss the anomalies they detected, consider their significance, and determine what they might indicate. For example, we discuss why the magician shuffles the deck just after the spectator has already shuffled it. This action makes no sense, so this action must achieve something - what? Why does the magician "just mark the location" to which the spectator has cut? Would it not make more sense for the magician to name in advance the target card, and for the spectator to cut the deck and reveal it for themselves, etc.? With a little coaching, most students can discern the underlying methodological approach that facilitates the effect. I then explain how and why I had to amplify the anomalies for educational purposes and discuss and demonstrate alternative methods entailing

less conspicuity. We then discuss deceptive design, anomaly management and attenuation strategies, and counter-deception processes for isolating and amplifying anomalies.

As an interesting aside, it is staggering how often the same card ends-up on the bottom of the deck after the spectator has shuffled during the second performance. The subsequent revelation of the same card utterly flummoxes students when it occurs. I can only presume that the odds somehow get stacked greater than 1/52, as the selected card may unintentionally have become micro-crimped during handling, and the spectator's shuffling is often weak, etc. Nonetheless, this is great fun when it happens, and I usually milk the opportunity for maximum effect before explaining the coincidence.

Once the lesson has concluded with the two cross-cut force exercises, students begin to apply what they have learned to other more complex magic effects. These incorporate more subtle anomalies such as key cards, stacks, false shuffles, etc. Students then analyse the anomalies present in cases taken from other domains such as confidence tricks, before finally applying the principles and processes to cases of deception from their professional fields of practice.

Of course, there is a great deal more to the professional study and practice of counter-deception than anomaly detection alone. Nonetheless, magic has proven to be a valuable and engaging tool for studying counter-deception in the classroom. It enables students to gain first-hand experience of being fooled, and it allows them to develop and try-out practical means to lessen the chances of this happening. The lessons they learn from studying magic can be scaled-up and transferred directly to their professional practice back at their workplace. And following the course, a few students have even felt motivated to pursue magic more seriously.

How then might magicians apply these principles of counter-deception to enhance the deceptiveness of their effects?

# How to Increase Deceptive Potency

Deception and Counter-deception are symbiotic. A detailed understanding of one practice can enhance significantly the other. By understanding why and how deception may be detected and unravelled, it becomes feasible to design more deceptive approaches, mitigate inherent risks, and develop contingencies for if the deception fails.

The design of most deceptive action begins by identifying the desired behaviour change in the target. However, as magic primarily fulfils the purpose of entertainment, it stops short of behaviour change. Instead, it begins by identifying the desired effect to be achieved - i.e. the erroneous sensemaking necessary for the spectator to believe they have experienced an impossible event. This goal is then deconstructed systematically into a sequence of component activities, and the deceptive means for manipulating the attention, perception, sensemaking, and expectations of the spectator is determined. The selection of deceptive methods from amongst the myriad of possibilities is driven primarily by the designer's experience and draws from their established repertoire of deceptive approaches, tempered by consideration of viability and risk. The designer's experience also enables innovation and, where necessary (or indeed, feasible) the development of new deceptive strategies. In parallel, the designer will consider the narrative, artistic and stylistic aspects of the performance.

Any deceptive action can potentially be rendered more deceptive by analysing how reality must be compromised, and the nature and conspicuity of the anomalies this creates. As a guiding principle, all deceptive action should be kept as simple as possible, while optimising efficacy—the fewer moving parts and dependencies between them, the better. Less complex, more direct methods are preferable to those that rely on technical complexity, as complexity always increases risk. And based on the hypothesised solutions generated by students throughout many repetitions of the exercises described earlier, it would (at least, prima facie) appear that simple methods may be more deceptive than complex methods.

Note, however, that simplicity is often harder to achieve in the design of deceptive action than complexity. In the nuanced double-lift example discussed earlier, the more straightforward approach (the push-off double) involves fewer moving parts, fewer anomalies, and considerably less conspicuity than the beginner's version of the sleight. Yet it is significantly harder to master and to perform effectively.

However effective the deceptive methods selected, anomalies will inevitably still be present, and these notionally are always detectable by the spectator. How then might anomalies be managed to minimise the chance of their detection? Two sets of strategies follow, both of which employ acronyms as memory aids. PRE-FOCUS strategies (shown in Table 3) lessen the chances that a spectator will detect an anomaly. PINK-MARS strategies (shown in Table 4) attenuate the conspicuity of those anomalies that are present within an effect. Both sets of strategies can be applied to inform the design, selection, and application of deceptive methods (both moves and objects) based upon an assessment of inherent anomalies.

Next, I shall discuss two simple exercises for practising counter-deception, that can potentially inform the effect design and refinement process.

# Two Exercises for Practicing Counter-Deception

## Exercise 1

In this exercise, you will review a video of a magic performance that you have never seen before, and about which you ideally know nothing. For example, you may wish to find a demonstration on a magic website of a newly released effect or an archive clip that you have not seen previously.

| PRE-FOCUS (Lessen a Spectator's Likelihood of Detecting an Anomaly) | |
|---|---|
| **Strategy** | **Explanation** |
| **Pacify** | Seek to prevent the spectator from adopting an Active Stance. Keep the spectator engaged on a cognitively taxing task, relaxed, distracted, amused, etc. |
| **Repackage** | Repackage the anomaly to make it look like something else. Present the anomaly as one component of a larger, legitimate, pattern, action, or object. |
| **Exhaust** | Exhaust spectators' attentional resources by getting them to adopt and prolong the Active Stance at the wrong times. For example, invite the spectator to inspect thoroughly something inconsequential. |
| **Falsify** | Misdirect by presenting false anomalies that suggest incorrect solutions, then negate these later in the performance. |
| **Overload** | Overload the spectator by flooding them with false anomalies, hiding the real anomaly amongst these. |
| **Condition** | Present and sustain a false anomaly without a deceptive cause, to condition the spectator, and desensitize them to its presence. Less attention should subsequently be directed towards the anomaly when it arises for real. For example, if an unusual grip is required, use this grip throughout the effect. |
| **Unite** | Push anomalies closer together in time and or space, to enable multiple anomalies to be covered by a single moment of strong misdirection. For example, use one instance of misdirection to cover a unified pass and a palm action. |
| **Shift** | Shift anomalies to where the spectator cannot see them (i.e. use Brown's concept of 'Invisible Compromise'), then block access to these locations. |

Table 3 - PRE-FOCUS for reducing the conspicuity of anomalies

Ensure you watch the video from start to finish **before** answering the following questions:

· Did the effect fool you?

· How engaged in the performance were you? Did you at any point forget that you were supposed to be determining the underlying methodology? If so, why?

· If you were able to establish a solution, did it come to you straight away, or did you have to work to get it? How confident are you that you know the precise method(s) employed? Do you have a range of potential methods in mind, but are not sure which specific method(s) featured?

· What enabled you to establish how method(s) were used in the effect? Try to replay the sequence of mental steps you went through. What things attracted your attention? What did you deliberately make a point of looking at or monitoring? What struck you as strange or unusual? Did you detect any get-readies, sleights, or gaffs? If so, how, and what were the clues?

· Did you formulate hypotheses about the moves or gaffs that were employed? Did you test your hypotheses, and if so, what did you learn?

· Did you need to replay the video? Why? What did you want to look at again? What did you catch on repeated viewings that you missed previously? Why did you initially miss these factors?

· Where any of your assumptions proven wrong?

| PINK-MARS (Attenuate the Conspicuity of an Anomaly) | | |
|---|---|---|
| **Factor** | **Principle** | **Explanation** |
| **Position** | Ensure congruence and logic of position. | Think carefully about an object's or action's location. Does it make sense regards its (real and apparent) form and function? Is the object or action harmonious with the environment and the other objects or actions around it? Do they make sense when taken together? |
| **Intensity** | Make an object's or action's properties less intense. | Consider as many properties of the object or action as possible. For each conspicuous feature, seek to make it weaker, less significant, or less noticeable; have softer edges, appear thinner, etc. Or find ways to blend the property with other properties, or into the background. |
| **Novelty** | Minimise novelty. | Seek to make the object or action look as uniform, regular, and as plain as possible. It should appear 'grey' and 'boring'. In this respect, an object or action should not appear too perfect or too new and should exhibit appropriate signs of ageing, wear and weathering. Similarly, an action should seem mundane, routine, and expected. |
| **Kontrast (Contrast)** | Reduce contrast. | Consider how the object or action relates to its location, its background, and its performative context. Seek to minimise differences. Consider all the object or action properties and in particular study the differences, boundaries and transitions between these properties and the object's or action's location and background. Think about how an object stands or sits on the ground or upon other objects; its edges; its colour, etc.; or how an action transitions between different phases or modalities. |
| **Movement** | Minimise movement. | A general rule for minimising conspicuity is to keep movement to a minimum, as all forms of motion are highly conspicuous and will readily seduce a spectator's attention. When movement is necessary, seek to coincide its occurrence with lapses in the spectator's vigilance. Alternatively, try to hide the movement within a more conspicuous yet natural movement (i.e. In-transit action). Simplicity of design can help minimise the need for movement. Remember also that movement can constitute any change in location, size, colour, shape, intensity, etc. |
| **Absence** | Justify any absence of conspicuity. | Lack of naturally occurring conspicuity can, itself, prove conspicuous. When there is an absence of natural conspicuity, fill-in or simulate the missing conspicuity. Alternatively, make the reasons for such absence clear, so that the spectator does not need to seek an explanation. |
| **Repetition** | Manipulate repetition. | Seek to minimise the number of exposures that the spectator has to the object or action, as repeated exposure will make the object or action more conspicuous (due to recognition). However, repeated exposures will subsequently desensitise the spectator to the object or action, and eventually, they will pay it less or no attention. |
| **Size** | Ensure typicality and plausibility of size and magnitude. | The object or action should appear to be of 'normal' size, shape, dimensions and magnitude. It should, therefore, appear to be a typical example of such an object or action (i.e. you should never need to justify using an object that seems to be an exceptional or unusual version of a natural object, as doing so will immediately arouse suspicion). |

Table 4 - PINK-MARS for attenuating anomaly conspicuity

· Did you recognise parts of (or even the entire) routine from other routines you already know?

· If you had been there in person, what would you have liked to inspect? Where would you have liked to have looked, and what would you have examined?

· Were there (or are there still) gaps in your understanding? What questions do you still have?

· What methodological or changes in the presentation of the effect might have enabled it to fool you strongly? If you were to perform the effect yourself, what changes would you make?

The purpose of this exercise is to become more deliberative and reflective about how you detect and recognise the deceptive methods that enable the performance of an effect. In doing so, you will increase your awareness of how you use your expertise and knowledge to spot anomalies, how and why things you already know can still fool you, and how you detect and make sense of the available clues to the methods employed. By becoming more aware of how you unravel a case of deception, you begin to gain more insight into how others may similarly resolve and explain your deceptive performances. And, by experimenting with the PRE-FOCUS and PINK-MARS strategies, you may start to amplify the deceptive potency of your routines.

## Exercise 2

Take a regular unboxed deck of cards and stand in front of a mirror. Perform your best in-the-hands false riffle shuffle and see if you can fool yourself, if only momentarily, into believing that the shuffle was genuine.

Now try to replay mentally what just happened. Recall yourself walking up to the mirror, and then unpack in as much detail as possible what you were looking at and what you noticed:

· Where did you direct your eyes?

· Did you focus on your hands, noticing their position and their movements?

· Were you looking at the cards themselves, interweaving, bridging and then collapsing (for real, or simulated)? Perhaps some combination of both?

· Did you notice the height and position of your forearms?

· What about the position of your elbows and their angles?

· How was your body orientated? Straight on to the mirror, or at an angle? Did this change across the performance?

· Did you study your broader posture?

· At any point, did you glance at your face?

· What movements stood out or caught your attention.

· Did you study (dependent on your method) any other follow-up postures or movements, such as your hand position when covering the deck or subsequently stripping cards?

· Did you explicitly study and track the angle and orientation of the deck itself throughout the performance?

· Did you study the flow of different movements, the transitions between these, and the speeds and durations of the actions? Was the pace of your performance consistent, or were there changes in tempo as you transitioned through different processes?

· If you didn't fool yourself, why not? (You were aware that what you were doing was false, but did you detect any of your 'tells', inconsistencies, leaks, or imperfections/anomalies?).

· And, last question, did you make a point of listening out for anything unusual or abnormal during your false shuffle?

People are often poor at analysing their own performance, as they struggle to shift their locus of evaluation to view their actions from the perspective of a spectator. Also, what we believe we attend to in the environment, and what we actually attend to, are often very different. This exercise supports a review and self-critiquing process that can help increase our awareness of the anomalies created by the deceptive actions and objects we perform and employ, and the richness of the information that is available to a spectator when we perform. Each observation you failed to make could be a potential weak spot in your performance, as it is a component that falls outside of your conscious awareness. This aspect of your performance may potentially contain anomalies that could enable a spectator to detect and unpack your deceptive methods. This exercise can also be applied to any other form of magic by swapping-out the deck and its specific manipulations for different objects and their manipulations (for example, coins, sponge balls, thread work, etc.).

## Summary

No imitation can be perfect without being the real thing. Magic is not real. So, to simulate impossible effects, you have no choice but to compromise reality. Such compromise generates detectable anomalies, which means that your magic will always be imperfect, and always runs the risk of being discovered if the spectator looks in the right way, in the right location, and at the right time.

To reduce the likelihood of being caught, it is helpful to consider how, when and where you need to compromise reality via the moves you execute and the devices you employ. Each can be analysed in terms of its inherent anomalies, prompting you to identify opportunities to remove, reduce, relocate, attenuate, and to hide the indicators that deception is occurring.

These issues form only a small part of a broader range of effect design considerations, that include practical matters such as patter, spectator management, angles and sightlines, etc., together with artistic, stylistic, and presentational considerations.

The risk of getting caught also has to be balanced against the rewards of not getting caught, as bold and daring moves can create bold and daring magic. Besides, a wide variety of contingency strategies exist that can enable recovery in the event of the deception failing, such as outs, branching effects, post hoc reframing, bluffing, improvisation, etc. And unlike deceivers that work in other domains, if a magician does get caught during their performance, nobody dies.

By studying approaches to the detection of deception in alternative settings, we may gain new insights about why magic effects may sometimes fail to fool spectators. This knowledge can, in turn, help inform the design of more deceptive and impactful effects.

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