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# Tunneling Through Alternative Facts: The Qwand Problem Space Machine

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## Abstract

The Post-Truth Age is characterized by an information multiverse where truths are multiple and simultaneously manifest. Post-truth appeals to emotions and personal beliefs, and is often based on alternative facts. Truth, instead, sits at the center of scientific endeavor, which is based on observable and measurable evidence. Design is less concerned with truth than science and it is at ease with deception, misdirection and magic as it is with facts. In other words, design tunnels through science and belief. This paper reports on the design of the Qwand, a Quantum Wand, that invokes the parallel exploration of all the possible truths of a given problem space.

## Author Keywords

Quantum Design; Post-Truth; Alternative Facts; Playfulness; Delightful Disruption; Tragic times.

## ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

## Introduction

*"When an honest man speaks, he says only what he believes to be true; and for the liar, it is indispensable that he considers his statements to be false. For the bullshitter, however, all these bets are off: he is neither on the side of the true nor on the side of the false" [4].*  
The information environment we live in is *de-cohered*:

## TEXT BOX 1

### The Qwand design process

The four-step make-search design process from which the Qwand emerged:

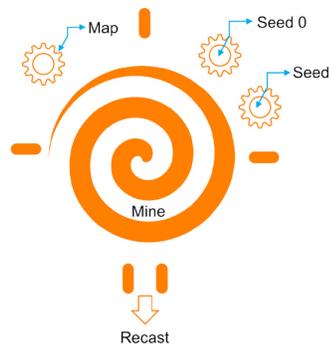


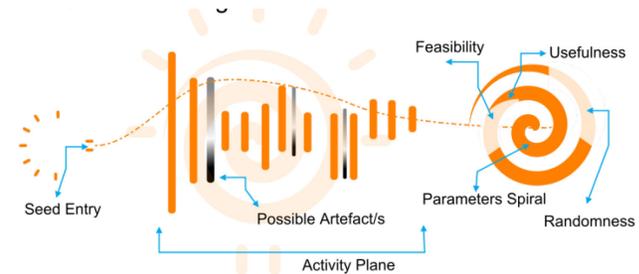
Figure 1 (top right corner) zooms into the *Seed* entry step of the process. DPinside functionalities are accessible through multidimensional interfaces, collectively referred to as 'Interspace'. The Interspace allows for parameter calibration at each step of the process. Parameters include *feasibility*, *usefulness*, and *randomness*.

both 'true *and* false' are 'here *and* there' at the same time [8]. Alternatives become facts at the moment of speech, and coexist in a multiverse of parallel truths propagating wave-like simultaneously in all possible directions [18]. Examples of this phenomenon abound: for instance, the Bowling Green Massacre [14, 15] in the US and the pre-referendum health fund promise in the UK may have been conceived with the intent to deceive at first [5], but have then collapsed as post-truths in the eye of the media and of the beholders.

Reality is not what it seems: reality "*is quirky and strange*" [8], in other words, "*reality is quantum*" [11]. In the same way that quantum biology takes advantage of the "*quantum trickery*" of quantum mechanics [8], i.e. in explaining photosynthesis [7] and bird navigation [10], we suggest Quantum Design (QD) as a way to take advantage of the quirkiness of the digital information space mechanics. The purpose of QD is to envision tools that can support the exploration of all possible truths in a disruptively delightful way. This paper exemplifies this approach through the design of the Qwand, a quantum wand that allows the exploration of a multiverse of alternative facts.

### Harnessing QD Trickery: Design and Magic

Both interface designers and magicians create alternative (virtual) realities. Digital designers do so through digital displays and capture their performances in code and design artefacts; magicians bring their alternative realities live on the stage [16]. Interface designers depend on the *mechanics* of digital technology, the aesthetics of graphic design, and the science of psychology [16]. Magicians depend on the mechanics of their tricks, the aesthetics of showmanship, and also on the science of psychology.



**Figure 1 DPinside Make-Engine Interspace**

Quantum design brings together the knowledge of computing mechanics, the trickery of virtual reality, the misdirection of digital illusion [6] and the science of human behavior by '*fabricating reality to produce surprising*' and delightfully disruptive possibilities [1].

### Designing the Qwand

The Qwand emerged from a four-step design process that used the DPinside Make-Engine as an online tool for cyborg creation. Text Box 1 illustrates the four-step process outlined below:

- **Seed** DPinside with exemplars of alternative and contested facts [3, 13] (e.g. moon landing, flat earth, Elvis Presley death, shape-shifting lizards);
- **Map** such exemplars onto different design approaches (e.g. Speculative Design [9], Critical Design [1], etc.);
- **Mine** best, worst, and improbable design ideas by automatically scraping online content (e.g. the IgNobel prize [12]);
- **Recast** outputs from 1-2-3 into final design outputs with detailed implementation instructions.

## TEXT BOX 2

### Quantum Concepts

*Wave-particle duality:*  
every quantic entity may be described in terms of both (discrete) particle and of (continuous) waves.  
*In QD this allows the manipulation of the same information quantum in different points at the same time.*

*Quantum entanglement:*  
physical phenomenon occurring when pairs or groups of particles interact in ways such that the state of each cannot be described independently from the others.

*In QD this allows a Participatory Entangled Research (PER) approach between particles of truth.*

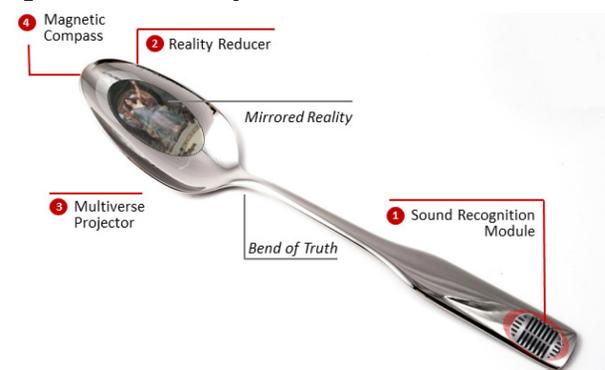
*Tunneling:* quantum mechanical phenomenon where a particle tunnels through a barrier that it classically could not surmount.

*In QD this allows tunneling factual science through fiction, deception and lies.*

DPinside Interspace (Figure 1) allows for parameter calibration at each step of the process through threshold setting sliders that dynamically tune outputs results. Parameters include feasibility, usefulness, and randomness.

For this study we have tuned the system to maximum usefulness, medium feasibility (i.e. sufficient to produce a proof of concept, see Figure 2), and fair randomness. For example, the spoon-like design was influenced by both DPinside inexplicable sensitivity to mirrors and by the make-search context (breakfast). DPinside is not publicly available; its patent is pending and only runs as beta. IBM Watson<sup>1</sup> is widely recognized as its precursor, albeit lacking the 'search to build' capability.

### Qwand Anatomy



**Figure 2 The Anatomy of a Qwand (proof of concept)**

The spoon-like design of the Qwand is deceptively simple (Figure 2 shows the first proof of concept). Its core components are as follows:

1. *A Sound Recognition Module* that captures the sound used to evoke a problem space.
2. *A Reality Reducer* that converges a multitude of views into a single focal point.
3. *A Multiverse Projector* that refracts the infinite viewpoints into an information multiverse.
4. *A Magnetic Compass* that guides the multiverse exploration.

### How it works

The Qwand works by freezing a multiverse of truths of a given problem space. It does so through a four-step process: invoking, projecting, entering, and revoking.

- **Invoking:** the problem multiverse to be explored is invoked by speaking or playing a sound to the Qwand.
- **Projecting:** the Qwand projects all the possible viewpoints of the evoked multiverse in a wave-like continuum of truths. One can bend Truth to a desired degree by using the neck of the Qwand (see Figure 2)
- **Entering:** the Qwand assigns a symbol to each portal leading to a specific truth particle.
- **Revoking:** the observer exit the invoked multiverse by either (1) manually bringing the spoon-mirror to her eyes (2) by setting a timer for a shutter to automatically close the mirror. Both methods work by collapsing all possible truths into the one of the observed.

### Use case: Moon Landing

A recent research<sup>2</sup> carried out in the UK indicates that more than half of the Britons think that the moon

<sup>1</sup> <https://www.ibm.com/watson/>

<sup>2</sup> <http://www.mirror.co.uk/news/uk-news/moon-landing-celebrates-47th-anniversary-8446862>

landing never really happened. The authors take a non-dualistic approach (not false, not true, and potentially quantum) on the matter and use "Moon Landing" as use-case scenario to illustrate how the Qwand works.

### *Invoking*

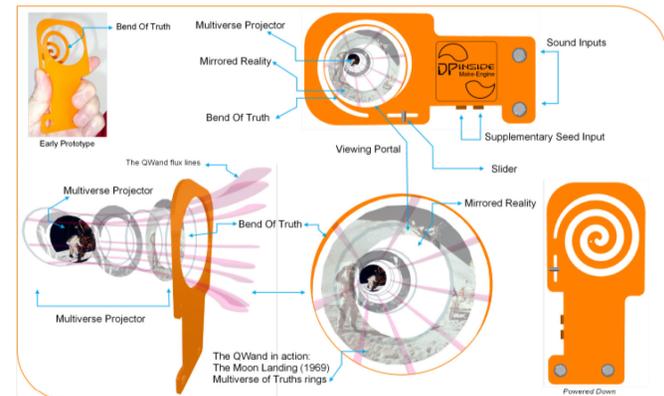
Invoking is done through sound – i.e. any sound including human voice, music, bird songs, and mechanical noise (e.g. a pneumatic drill). For simplicity we used our voice and pronounced the words "Moon Landing" clear and loud into the Sound Recognition Module.

### *Projecting*

After the invocation, the Qwand projected a multidimensional array of facts particles purporting a multiverse of truths. This took the shape of a hologram-like tunneled vision cast beyond the outer part of the Qwand surface as Figure 3 shows - the latest Qwand 2.0 version was used for this case study.

### *Entering*

Each truth particle can be accessed through a portal. To help navigate each discrete truth, each portal displays a symbol representing a particular multiverse view point. For example "★" (code point: U+2605) allows instantaneous access to all 'truths' regarding the visibility or otherwise of stars in space. Once we had woven our fingers through the ★ symbol, we were able to walk into a complex audio/visual Qscape booming with potentially true false statements "You can see stars, pretty much all the time, you can see them" (Michael J Massimino, former NASA astronaut); "We were never been able to see stars on the moon surface" "The sky is deep black" (Neil Amstrong, astronaut and first person to walk on the moon) [17].



**Figure 3. Qwand 2.0, The Moon Landing use-case scenario.**

### *Revoking*

The quantum explorer can exit the problem space at any time by collapsing reality into the 'observed'. For this experiment we used a timer that automatically shut the mirror projection and brought us back to our breakfast table. We noticed in prior experiments that the timer may cause a rude awakening and plunge the multiverse explorers into a reality shock. Future work will look into more gentle ways of reality revoking.

### **Concluding Remarks**

This work emerged from part despair and part sheer desire to bring playfulness and delight amid times where dangerous acts conflate with unbelievable truths. The Qwand prototype is currently on tour and is used to explore a number of alternative facts scenarios. Due to the nature of the Qwand, dates and locations are extremely difficult to pin down, so do please contact the authors if interested in becoming a quantum explorer. Upon request, we can also arrange a demo of the DPinside make-engine and experiment with a selection of *search to build* tasks.

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