

Forces of Change

Issue 2 • December 2017







WELCOME

Welcome to the second report in our series "Imagine: Forces of Change." In our first report, we focused on the expanded and redefined media landscape as one of five forces of change challenging marketers to reconsider the way media is defined, leveraged and orchestrated.

In this report, we focus on a second force of change that we and the Wharton Future of Advertising (WFoA) community emphasized in our recent book Beyond Advertising: the need for marketers to acknowledge, accept and proactively act on the fact that their brand communications do not exist in a vacuum. To be sure, advertising has always been part of the cultural zeitgeist, but it must now be moved more squarely into a brand's planning and strategy functions due to the recent confluence of:

- Social media that quickly outs companies for both intentional or unintentional lack of cultural or social consciousness
- The growing call for companies to take a stand on relevant societal issues—and to back that stand with coherent business choices throughout the organization

- The backlash and potentially longlasting brand damage due to tonedeaf, inconsistent or irresponsible adjacency or timing of messaging, in many cases due to automated media placement
- Missed opportunities to make a connection between the role of products and services in people's lives and their larger societal context

In this report, we highlight the implications of "Negative Reach"—the increased risk to brands for appearing in places that are counter to the brand's purpose—and the steps brands can and should take to assess and address that risk.

In particular, Hearts & Science and its partners at Omnicom Media Group conducted research to quantify the risk with two key generations: Millennials and Gen Xers. Of note:

- 70% will not like, recommend or purchase from a brand whose ads appear next to offensive, hateful or derogatory content
- 64% say a brand risks tarnishing its reputation when its ads appear next to such content
- 51% are less likely to purchase from such a brand, even if the placement was not the brand's fault

These findings suggest just part of the downside brands that lack oversight or fail to take proactive steps to manage their message deployment will face in an era fraught with growing threats to hack

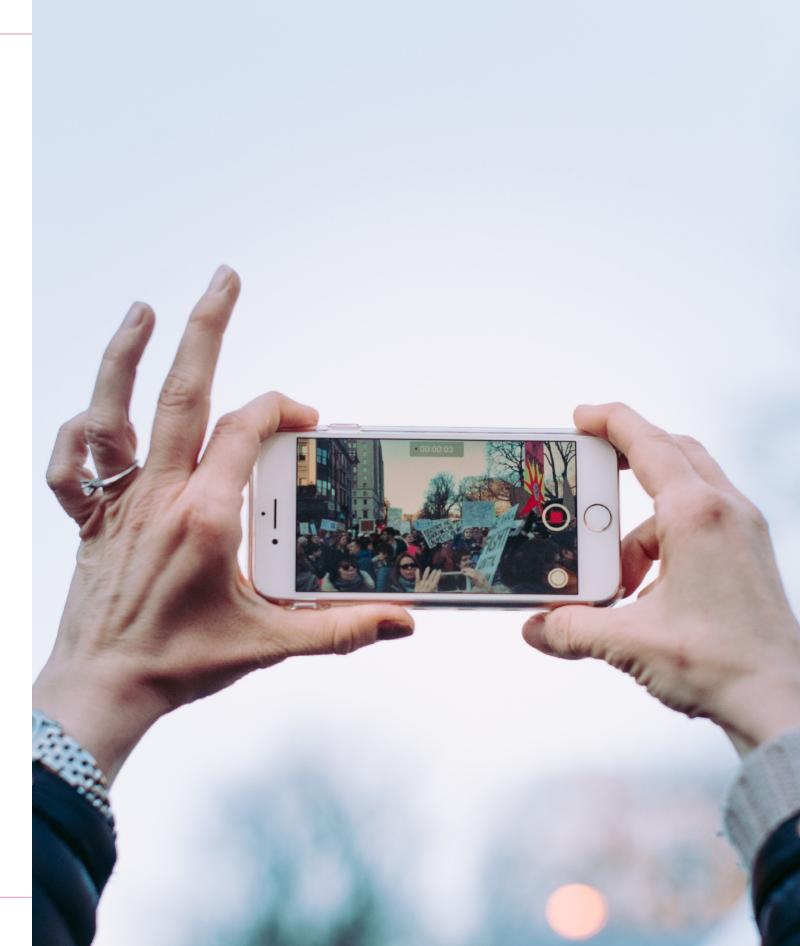
the ecosystem. Once again, the forces of change may emerge in the marketing department—at the intersection of people and their messages—but quickly have the potential to reverberate negatively throughout the entire C-suite.

How "safe" is your brand? How do you know where and when your messaging surfaces—and what is adjacent? What is your recourse? What policies and procedures can you put in place to protect your brand from Negative Reach? And more fundamentally, where does your brand stand on the difficult and often divisive issues and attitudes of today? Is there a role for your brand to bridge the divides?

We welcome your thoughts and feedback and encourage you to leave us your comments with #forcesofchange.



Catharine Hays
Former Executive Director
Wharton Future of
Advertising Program







POINT OF VIEW



By Megan Pagliuca

While brands and agencies have long been focused on maximizing reach with consumers, there's an open secret in the industry: Some of this reach is a waste.

More recently, however, due to increasing brand safety concerns, some of this reach has gone beyond being merely wasteful—it's actually damaging brand equity, creating PR risk and hurting a business' bottom line. We call this "Negative Reach."

Brand safety refers to two distinct issues: fraudulent inventory (whether from bots or inventory spoofing) and adjacency to content that isn't aligned with brand values. Neither of these issues is new, but increased sophistication of fraudsters and increased demand for quality inventory (particularly in video) have outpaced the capabilities of technical solutions in place

to combat them, creating a renewed sense of urgency.

The urgency to combat Negative Reach is warranted. New research from Omnicom Media Group found that 70% of Millennials and Gen Xers will not like, recommend or purchase a brand if its ads appear next to hateful, derogatory or offensive content—a scary reality when you consider the staggering purchasing power of these segments. And 51% of these valuable audiences are less likely to purchase from such a brand—even if the placement wasn't the brand's fault.

Earlier this year, many premium brands were rightly shocked to learn that their ads might be appearing next to derogatory, hateful or offensive content.

Globally, most brands adopted a whitelist-only approach to combat the threat, and agencies worldwide shifted their focus to developing whitelists that align with clients' brand values. JPMorgan Chase, for example, took a whitelist approach that resulted in slashing the number of sites on which it advertises in order to gain transparency—without decreasing performance.

Whitelisting is a good first step, but it doesn't solve another major fraud problem: domain spoofing. Google ran tests earlier this year with trusted publishers like CBS, turning off the availability of their inventory for brief periods from the CBS ad server, and found that this premium inventory was being sold by fraudsters who were making

low-quality domains appear to be CBS inventory. This type of fraud, prevalent on video inventory in the open exchange, cannot be prevented by a whitelist and often goes uncaught by third-party verification.

Last spring the IAB launched ads.txt, which requires publishers declare authorized resellers of their inventory. This is a critical step forward for the industry to solve inventory spoofing. Separately, understanding the most effective supply path or inventory source to access a domain—supply path optimization (SPO)—presents an area of opportunity to drive increased efficiency.

Unfortunately, there's no silver bullet that can ensure brand safety. There are steps, though, beyond just engaging a third-party verification provider, that should be taken to address brand safety and to combat the threat of Negative Reach:

MAKE SURE ADS ONLY APPEAR ON DOMAINS THAT HAVE BEEN REVIEWED.

Every site that your ad appears on should be known and checked not only through technology solutions but by people as well.

CHAMPION THE ADOPTION OF ADS.TXT.

Brands must work with agencies to audit inventory spoofing and ensure ad units are purchased through authorized resellers. Vote with your wallet, require publisher partners and platforms to adopt ads.txt and find out what solutions your agency has in place prior to full ads.txt adoption.

SHIFT DOLLARS TO PMPS AND LIMIT SSP PARTNERS.

While all buys (programmatic or non-programmatic) are susceptible to fraud, fraud is the most prevalent in the open exchange. Shift spend to PMPs where the inventory source/SSP is inherently defined as part of the deal. Additionally, monitor the SSP partners for both open exchange and PMP inventory, limiting partners to those who adhere to your safety standards.

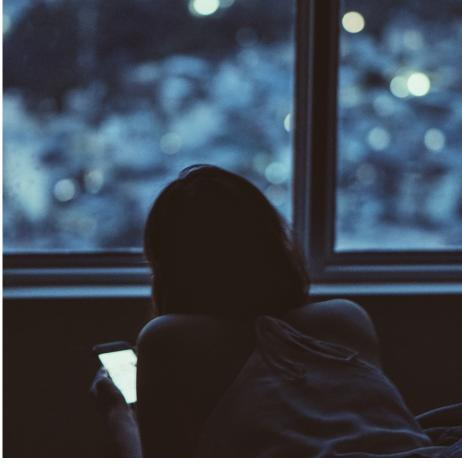
EVALUATE FRAUD TECHNOLOGY SOLUTIONS ON A REGULAR BASIS.

Not all fraud detection technology is created equal. Sadly, the fraudsters are sophisticated, and their approaches are always evolving. Consider ongoing testing and evaluation of fraud detection technology.

DEPLOY YOUR OWN SAFETY MECHANISMS—BOTH HUMAN AND TECHNOLOGICAL.

Platform filters and verification providers that track third-party fraud aren't enough Brands need to develop their own whitelists aligned to their brand values and audited by humans. Brands should be holding their agencies accountable for monitoring spikes by domain and inventory source (SSP).

The threat of Negative Reach is real, and it affects us all. Brands must work together with publishers, vendors and agencies to address the problem—or else they run the risk of not just limiting return on advertising spend there, but eliminating it altogether.







BY THE NUMBERS

NEGATIVE REACH

Brands invest in advertising to reach consumers. But what if a brand's ads appear adjacent to questionable or unsafe content? Do people distinguish ads from the content and context in which they appear? Or do they hold brands responsible for their ad placements? Is there such a thing as "Negative Reach"?

> THE SHORT **ANSWER**

What's at stake? A big chunk of the brand value you have worked so hard to create.

Media Quality

(BRAND SAFETY, AD VIEWABILITY AND FRAUD) IS THE

#1 CONCERN FOR MARKETERS¹ **

75%

of media decision-makers at the Top 200 advertisers say it is very important to advertise on sites that are trustworthy, credible and of the highest quality²



WHEN ADS APPEAR NEXT TO OFFENSIVE, HATEFUL OR DEROGATORY CONTENT:

64% of Millennials and Gen Xers say a brand risks tarnishing its reputation³

MILLENNIALS & GEN XERS

70% of Millennials and Gen Xers will not like. recommend or purchase the brand if it appears around such content⁴



MILLENNIALS & GEN XERS

Adjacency Matters:







1 IN 3 MILLENNIALS AND GEN XERS

are unsure if the **brand is responsible** for the unsafe content or even if the brand knew where its ad was placed⁵

NEGATIVE REACH?

OF MILLENNIALS AND GEN XERS are less likely to purchase from a brand, even if the placement wasn't the brand's fault⁶

Safe



WHEN THEY SEE ADS IN **UNSAFE ENVIRONMENTS** (VS. SAFE ONES), THEY ARE:

Unsafe Placement

3X MORE LIKELY NOT TO RECOMMEND THE BRAND

4X MORF LIKELY NOT TO **CONSIDER PURCHASING** THE BRAND⁷



Among the myriad challenges marketers face in this ever-evolving ecosystem is the heightened risk of brand messaging appearing where you do not want it to be: where it implies undesired affinity, much less endorsement.



Catharine Hays Former Executive Director Wharton Future of Advertising Program



The value of brand-safe environments is increasingly a determining factor in media selection. 92% of media decision-makers we surveyed say it is more important than ever to find credible, brand-safe environments in which to advertise. Concern about content quality has also changed the habits of many advertisers. They now scour the list of participating sites to make sure they are reputable, paying more attention to site lists than they did just six months ago, and work more closely with publisher partners to ensure brand safety.



SVP. Research Solutions Meredith Corp.

THE STAKES are high:

TRILLION

MILLENNIAL ANNUAL BUYING POWER IN THE U.S. ALONE⁸







Every brand and agency should be held accountable to know and monitor—both from a technology perspective and from a human perspective—every domain a brand's ad is served on. Media agencies buy media, so if they don't know every site where the media is being placed, they're not doing their job.

5-7 Omnicom Media Group, 2017

5 Steps

TO COMBATING THE THREAT OF NEGATIVE REACH:

Unfortunately, there's no silver bullet that can ensure brand safety. By taking the 5 steps below, you can help protect your brand from the threat of Negative Reach.



Ads should only appear on domains that have been reviewed and align with your brand values.



2. CHAMPION ADS.TXT ADOPTION

Brands must work with agencies to audit inventory spoofing and ensure ad units are purchased through authorized resellers.



3. SHIFT DOLLARS TO PMPS AND LIMIT SSP PARTNERS

Pare down supply side platform (SSP) partners, monitoring URLs for unexplained traffic and engagement spikes.



4. DEPLOY BOTH HUMAN AND TECHNOLOGICAL SAFETY MECHANISMS

Platform filters and third-party verification providers aren't enough. Brands need to develop their own whitelists, aligned to their brand values and audited by humans.



5. EVALUATE FRAUD TECHNOLOGY ON A REGULAR BASIS

Not all fraud detection technology is created equal. Fraudsters are sophisticated, and their approaches are always evolving. Make ongoing testing a part of your process.





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Q & A



BRANDS ARE the Company THEY KEEP

In an era of social media, fake news and geopolitical distribution, publishers have been forced to adapt new formats and mechanisms for audience development, as well as redoubling their efforts to build direct relationships with consumers. There's perhaps no more fitting institution to ask about these issues

than *The New York Times*, the country's paper of record for generations. We had the opportunity to sit down with Meredith their modes of storytelling, embracing Levien, EVP and Chief Operating Officer at the *Times*. Below are edited excerpts from our interview.

How has your sense of responsibility changed in an era of fake news?

In a way, it hasn't changed at all. We always say we are not in the business of newspapers or apps or websites; we're in the business of understanding and we've been helping people understand the world for 165 years. We're as much in that business today as we ever were. Technology has essentially disrupted everything about how our journalism is expressed and distributed and experienced. but it hasn't disrupted society's basic need for truth and a trusted voice to deliver it.

The fake news crisis exposed a few things, including how important the news is. One of the exciting things about working at The New York Times right now is that the news in many ways has become the news. People have a heightened consciousness to the importance of highquality, original, independent journalism and what it means to a high-functioning society. We have a responsibility to help as many people as possible think about that and understand the choices they make about how they get their news.

How has your use of social media as a discovery/distribution platform evolved over the past 18 months?

Social media is the most important force that's changed how media is consumed in the last half-dozen years. Social media has had a huge role in making many more people engage with news, but what the fake news crisis exposed is that many people experience journalism at the atomic unit of a story, disassociated from the creator of that story or from the organization or funding mechanism for that creator. And something is lost when that happens. I think the same thing is true in the context of advertising.

Today's
consumer is
really savvy and
wants to engage
with things that
actually have
value to them
and are worth
their attention.

How do you think about brand safety, as both a publisher and a consumer brand in your own right?

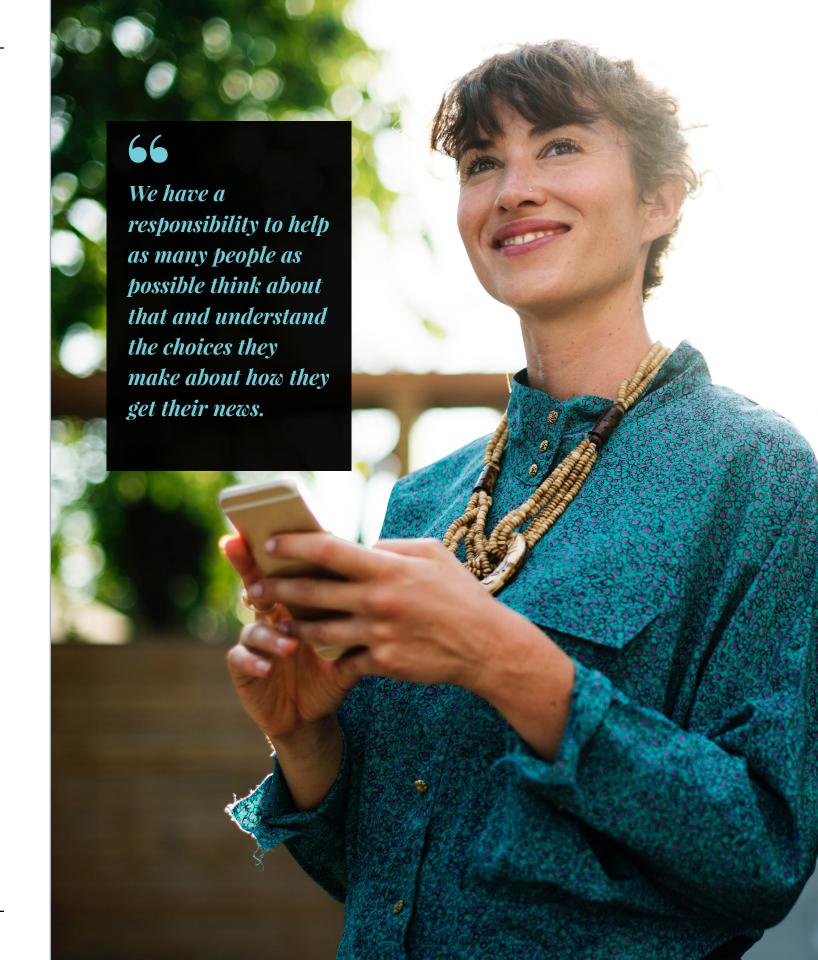
This is an incredibly important question, probably the most important question this year in advertising. The company a brand keeps really matters. It matters to The New York Times as a marketer, and we think it matters to the partners who advertise with us and who work with us. Today's consumer is really savvy and wants to engage with things that actually have value to them and are worth their attention. If an ad is next to a piece of content that doesn't have value, or that doesn't come from the place one assumes it comes from, it actually does take away from the associated brand.

How do you think about brand safety within the context of programmatic advertising?

Our business model requires that we have a direct relationship with consumers. I'm all for programmatic in the sense that 'programmatic' means process automation and more value and more efficiency. I am not for programmatic when it means many, many players taking a bite out of the value chain between the content creator and the marketer.

I think we're at a period where brands need to say, 'How many partners do I have, how do I actually do business with them?' and 'Who's in the middle, what role are they playing and is that an appropriate role for them to be playing?'

Brand safety means a few things, but most importantly, it means: Do I have trust and transparency and truth in the company that I keep? You get to those things by having direct relationships, even if those relationships are automated, and by controlling the number of entities who can be involved in your exchange with the content creator and the consumer.







Q & A

IS BRAND SAFETY



THE EYE OF THE BEHOLDER?

First, it was bots, then viewability. Now it seems context and content adjacency is the next issue on every marketer's mind when it comes to brand safety. We sat down with Jonah Goodhart, SVP at Oracle Data Cloud, to discuss the challenges of keeping brands safe in a digital world. Below are edited excerpts from our interview.

WHAT ROLE DOES BRAND SAFETY PLAY IN YOUR BUSINESS?

Brand safety and viewability—I think these things are related. Brand safety is one of the most critical topics that we've been focused on at Moat. It's really important that a brand knows that they can reach someone in an environment that is right for their brand.

THERE'S NOT A SIMPLE, SILVERBULLET FIX FOR ALL OF BRAND SAFETY.

AND HOW DO THE BRANDS YOU WORK WITH DEFINE "BRAND SAFETY"?

It's nuanced. Brand safety doesn't mean the same thing to every brand. And so one brand might say, 'I'm completely comfortable in that environment when these words are mentioned,' and another brand might say 'I'm completely uncomfortable in that environment when these words are mentioned.'

As a result, brand safety is a bit in the eye of the beholder. That said, there are some things that are consistent across almost every brand I've talked to, which is that certain things are just unsafe. Egregious content, extremism, terrorism, things like that—every brand that we've dealt with believes that is out of bounds and not what they want to be around.

HOW ARE YOU ADDRESSING THESE CHALLENGES? CAN ONE COMPANY SOLVE THE ISSUE?

We've launched something called 'open brand safety'—an open approach to brand safety that brings in academic institutions like the City University of New York School of Journalism to try to collectively work on the issue. It shouldn't be a corporate thing or just one company's product. Instead, let's bring all the resources to bear that we can to try to solve some of these issues because at the end of the day we want an open internet. We want the internet to continue to be free—we all benefit from that. And I think a lot of us recognize that advertising funds it and pays for all the free content we get to consume online. So we have to make those worlds work together better.

Brands are very focused on reaching the right people in the right environment and getting their attention, so it's critical that we can give brands the ability to have that right environment. There's not a simple, silver-bullet fix for all of brand safety. It's something that you really have to get into the weeds with and try to understand in order to improve it.



Jonah Goodhart, SVP, Oracle Data Cloud



WHY IS AUTHENTICITY SO CRITICAL FOR BRANDS TODAY?

As brands are increasingly built from the inside out, they have to have a true sense of who they are as an organization. Employees want a sense of vision and purpose for why they work at a company—the 'why' behind the 'what' of a company—and that needs to be genuine. We live in a much more transparent world, where it's only one search away to understand if a particular company isn't living up to the claims it makes. Being true, being authentic to who you are is vitally important for brands.

AND WHAT ABOUT CONSUMERS? IT SEEMS THEY ARE **INCREASINGLY SEEKING AUTHENTICITY AND BRAND PURPOSE AS WELL?**

People are holding companies to a much higher standard than they have historically. We live in a world where role models and leadership are changing a brand keeps. 'Where would you rather have your ad placed? and being challenged. People see companies as being instrumental at trying to effect positive change in the world. There's a piece of research that shows 87% of consumers expect companies will act with integrity, and consumers will have a much more positive feeling about a brand if it does. We have consumers who are much more values-driven, who shop with their souls as much as they do with their minds. They want to associate themselves with companies that they feel reflect who they are as people.

YOU'VE DONE A LOT OF RESEARCH AROUND "BRAND STRENGTH DIMENSIONS." WHAT ARE THE KEY ELEMENTS OF A STRONG BRAND?

A strong brand is clearly differentiated, relevant to the marketplace, has engagement with customers, clarity around the brand proposition, you're clear on what your proposition is, and you have a great presence in the marketplace.

These dimensions of brand strength can be insulators that protect the brand and reduce brand risk, as well.

HOW SO?

We live in a world where you're only one step away in any company from a potential problem, and the strength of your brand will help you. Whether it's Samsung or the famous example of J&J removing every bottle of Tylenol off the shelves, the way in which somebody deals with that problem is either going to help or hinder a customer's view of the organization. If a brand is authentic and deals with a crisis honestly, transparently and effectively, customers will actually come away with a better impression of the brand.

LET'S TALK ABOUT BRAND ADJACENCY. IS THIS A BIG ISSUE FOR YOUR CLIENTS? HOW DO YOU HELP THEM NAVIGATE **BRAND ADJACENCY CHALLENGES?**

I used to work in the media business many years ago as an international media buyer, and all the international media at that point—Time, Newsweek, The International Herald Tribune—were very keen to talk about the company



Next to Rolex or next to Timex?' sort of thing. Brand adjacency and media quality do present a message to consumers.

Then you think about placements where you are perceived to be investing or endorsing particular media, advertising in a show, for example. Consumers understand that it's a conscious decision by the advertiser to associate with that show. If the show or the host offends me in some way, then I may think negatively about that

The third example is a bit more difficult in the digital era where we have automated delivery of communications. The media business is fueled by technology, and it can result in a brand's ad appearing in a place it may not like. As a company, you have to watch out for that. It's a huge issue because if your ad appears next to an ISIS video, that's going to reflect badly on your brand. That's an extreme example, and I think customers would probably be more forgiving because they realize the company did not consciously choose to buy an ad tied to an ISIS video. But the company still has to deal with it and has to take definitive action to fix the problem and not allow it to continue.

HOW DO YOU THINK ABOUT HELPING YOUR CLIENTS NAVIGATE THE COMPLEX LANDSCAPE?

We live in such a complex world where so many of these things are intermingled-your brand, your product, your communication, the experience you offer-they're all becoming blurred. As brand custodians, we work very closely with all of the partners who are executing on that brand, including digital agencies and media agencies, to ensure that we are representing that brand's values. Partnership is critical. We cannot live in a siloed world anymore. We all have to work together because all of these things combined become what the brand represents in the consumer's mind. @





Q & A

FIGHTING The Fraudsters

An Interview with White Ops' Michael Tiffany

Over the past few years, brands and agencies alike have turned to cybersecurity firms like White Ops to help put digital safety protections in place. We sat down with Michael Tiffany, President and Co-founder of White Ops, to discuss domain spoofing, the real victims of ad fraud and a criminal mastermind named Max. Below are edited excerpts from our interview.

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What's at the heart of brand safety challenges? And who suffers?

All brand safety issues are about making it look like there's more quality inventory to buy than there really is. There are two victims to all brand safety problems, including the global scope of ad fraud: first of all, the advertisers who are paying for things that either aren't real or are unsafe. But second of all, great content creators who are great app creators who have real human engagement are victims. They aren't getting the dollars the advertisers think are going to them; those dollars are going to the fraudsters who are gaming the system.

Is it mostly buyers trying to solve the issue?

We are seeing a tremendous amount of momentum from buyers who want assurance that they're getting what they paid for. But increasingly, we're seeing momentum spurred by competition on the sell side in the form of great sellers who want to say, 'My inventory is better, and I'm willing to put measures into place to demonstrate that that's true.' Together, increased interest from buyers and increased competition among sellers is actually changing the world right now.

You've done a lot of research into the dark web and fraud organizations. Who are these fraudsters?

The profits of ad fraud aren't being used to rescue puppies. That's part of the reason why dealing with fraud is so pressing. The profits from ad fraud also fund cyber-criminal innovation, putting more money back into 'Black Hat' R&D to create new viruses and more sophisticated operations.

When I was a teenager, there was this guy Max who hung out in hacker circles and turned out to be a bit of a 'Gray Hat.' Well, he did something he shouldn't have and ended up going to jail. When he got out of jail, that's when he became a badass criminal mastermind! While he started out as a hacker, he received his crime training while being incarcerated, and he grew into this astonishing international criminal mastermind. It's an incredible story-Max got a whole book written about him-and the dark side isn't typically run by people like Max. Instead, it's diversified organized crime groups that are operating in places where they have managed to operate with impunity.

We've heard a lot about domain spoofing. What is spoofing exactly?

Spoofing is making counterfeit inventory. Just like people make counterfeit money, spoofers are creating counterfeit inventory and then passing it into the supply chain. To a buyer, it looks like ad inventory on a real publisher website. In reality, it has absolutely no relationship to that publisher whatsoever.

Is domain spoofing new? Or has it just become more sophisticated?

In the past, there was a daisy-chaining kind of scam in which a middleman would buy an ad impression and then resell it on the spot, making it look like the impression was delivered on a site other than where it was actually delivered. But in that scenario, there was at least a real impression at the beginning of the daisy chain.

What we saw emerge at the end of 2016, and has been playing out across the industry in 2017, is a new kind of spoofing where you just completely manufacture RTB inventory out of thin air and sell it in open RTB auctions.

Let's talk solutions. Ads.txt has been championed by many in the industry as the answer to domain spoofing. What do you think?

At White Ops, we look to partner with our clients to put in security controls—which are technology measures—as well as to ensure that the entire supply chain ultimately shares the same incentives as our client. What we're doing is really adding to our clients' buy-side leverage in order to ensure that downstream, everyone's really erring on the side of safety.

Ads.txt is a simple technical measure that publishers can take to prevent spoofing of their inventory. We've been monitoring the global adoption of ads.txt, and we're pleased with its progress. Ads.txt is like a patch to a security hole that we've collectively, as an industry, identified as the solution to a security hole. But the patch is still exploitable in the interim period between when the patch is released and everyone actually installs it.

What can brands and agencies do in the meantime?

Some companies are taking extra measures to innovate and fight against fraud. This is what I was hoping would happen—that some leaders would emerge to compete on quality. The fact is that some agencies are simply more capable of stewarding their clients' money—that's about taking the extra measures to arm up and do the right thing on a massive scale. I hope that those leaders push the envelope of innovation to achieve a higher level of trust and, ultimately, protect more and more dollars by winning more business based on those innovations.





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IN CLOSING

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COMBATING

NEGATIVE REACH

KEY TAKEAWAYS FOR MARKETERS

The impact of "Negative Reach" is real.

70%

OF MILLENNIALS AND GEN XERS

will not like, recommend or purchase a brand if its ads appear next to hateful, derogatory or offensive content..."9

It's not just about your own brand equity; it's about collectively stopping criminals.



Michael Tiffany President and Co-founder White Ops

"The profits of ad fraud aren't being used to rescue puppies. That's part of the reason why **dealing with fraud is so pressing.** The profits from ad fraud also fund cyber-criminal innovation, putting more money back into 'Black Hat' R&D to create new viruses and more sophisticated operations."

To combat the threat of Negative Reach successfully, brands must step back and get a bit introspective. Know thyself.



Jonah Goodhart

SVP

Oracle Data Cloud

"Brand safety doesn't mean the same thing to every brand...As a result, brand safety is a bit in the eye of the beholder."

While there's no silver bullet that can eliminate the threat of Negative Reach, there are concrete steps available to lessen the risks.



Megan Pagliuca

Chief Data Officer

Hearts & Science

"Develop your own whitelists, champion ads.txt adoption, shift dollars to PMPs and limit SSP partners. Deploy a combination of technological and human safety mechanisms, consistently reviewing your vendors—and hold your media agency accountable for where your ads appear."

Publishers can and should be allies in the fight.



Britta Cleveland SVP, Research Solutions Meredith Corp.

"[Advertisers] now scour the list of participating sites to make sure they are reputable, paying more attention to site lists than they did just six months ago, and work more closely with publisher partners to ensure brand safety."

It takes a village...



Managing Director Interbrand

"Partnership is critical. We cannot live in a siloed world anymore. We all have to work together because all of these things combined become what the brand represents in the consumer's mind."

...but not too big a village.



EVP and COO The New York Times

"I think we're at a period where brands need to say, 'How many partners do I have, how do I actually do business with them?' and 'Who's in the middle, what role are they playing and is that an appropriate role for them to be playing?"

Join the conversation at hearts-science.com/forcesofchange and let us know what you think using #forcesofchange.



LEARN MORE

To learn more about this and other Forces of Change shaping our industry, visit www.hearts-science.com/forcesofchange and share your thoughts and feedback with #forcesofchange.



