

# Human behaviour in traffic

an interview with Tom Vanderbilt



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**Gerry Gaffney:**

This is Gerry Gaffney with the User Experience podcast. My guest today has written for The New York Times and Wired, among others.

He's written about the architecture of nuclear shelters in "Survival City: Adventures Among the Ruins of Atomic America". But the book that caught my recent attention was "Traffic: Why We Drive The Way We Do (And What It Says About Us)".

Tom Vanderbilt, welcome to the User Experience Podcast.

**Tom Vanderbilt:**

Great to be here.

**Gerry:**

Let me start by asking you: Is this the book that every traffic engineers wishes that he or she had written?

**Tom:**

[Laughs.] That's a good question. I'm not sure, but one of the first things that struck me, that actually led me to write the book, was seeing how much traffic engineers themselves had actually written about what I assumed were fairly simple or easy-to-tackle problems out there in the traffic

environment, for example, how to get two lanes of traffic to merge on a freeway.

You would think this is a very simple sort of problem. Two lanes into one, how tricky can that be? And investigating this problem myself I came across these 120-page reports on various merge strategies and all the various implications and things that had to be taken into account. So I felt like traffic engineering had this secret and vast literature that was out there, that the average person wasn't really aware of.

And part of what I really wanted to do was synthesise and boil down some of those findings into a more accessible package. So that's essentially what I was trying to do. I'm not sure how I stand in the eyes of traffic engineers.

**Gerry:**

It certainly seemed to me that you took a topic that was relatively – pedestrian is obviously the wrong word [laughter] – but relatively mundane and turned it into something fascinating.

I wanted to read a little quotation from the book, because it did strike me that if you replaced the word "road" with "internet" it would be equally true: "The road, more than simply a system of regulations and designs, is a place where millions of us,

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with only loose parameters for how to behave, are thrown together daily in a kind of massive petri dish in which all kinds of uncharted, little understood dynamics are at work.”

Did it occur to you that that might have any implications for the online world while you were investigating this area?

### **Tom:**

It’s funny that you mention that. I have my computer set for, appropriately enough, Google Alerts, for all things basically traffic. I find that on certain days, or most days actually, half the entries are about vehicular traffic and then half the entries are about internet traffic. Generally on the order of how can you drive more traffic to your site, or something like that. And of course, those are all... anything internet traffic related is viewed generally as good and anything vehicular traffic generally has a negative connotation to it, which I find interesting.

But there’s all sorts of implications. Another thing is that behaviour in various contexts, on the internet and in traffic, can be quite similar. For example, online chat rooms. Psychologists talk about this thing, the online disinhibition effect, which is that you go onto a chat room, no-one really knows who you are, you can sort of lurk in the distance as they call these people and say nasty things. And you’re not really held accountable for your actions. No-one is going to associate what you said with who you are.

And I find traffic functions the same way. We’re driving out there in our anonymous vehicles with a user tag on it – a licence plate – which is some sort of identification but doesn’t really reveal anything about who we are. So I find that anonymity affects behaviour in both fields.

And then in a larger field there’s all sorts of implications and similarities about the behaviour of internet traffic networks and traffic networks. There’s a think called the Braess’ paradox, for example, which comes from networking science. When you remove one link from a network sometimes it actually seems to increase the performance of that network. Braess’ paradox has been found, according to some, on internet networks as well as vehicular networks, and that’s about as much as I can explain of it because it’s a quite complex topic.

In any case you’re spot on in identifying all kinds of similarities between the two fields.

### **Gerry:**

Tell me, how did you get interested in traffic? Does your publisher point you at something and say “Hey, Tom, write about this,” or are you one of these people who wanders around picking up ideas?

### **Tom:**

Yeah, in fact I was sort of wandering in the desert, because I couldn’t come up with an idea. I was actually out driving one day and had a kind of experience that tapped... in my mind I’d have a number of these experiences where I’d stood back for a moment and thought “You know, why is this happening this way?”

I think that the traffic environment and driving in general is something that for many people is an automatic behaviour that is not really thought about too much beyond the act of having to do it.

And when you look at interesting maps that have been done of the public space in a given city, say Detroit or even more pressingly some of the newer cities in the US, the amount of space that’s devoted to the automobile, when that’s shaded in a different colour on these maps, it’s really

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quite striking. It's 50% or greater in many cases, when you tally up all the parking facilities, the roadway, and for many years this has just been handed over to engineers who have treated it in a very engineering-oriented way, as pipes in a network to move as much flow through from point A to point B without giving a lot of other thought to... In cities, for example, streets have other functions, and maybe there's a way to think about this aesthetically or think about it in terms of other road users, and I think we're coming to a better appreciation of that.

But to my mind traffic is this... we view this area as dead space or something, but it really is a large part of our life.

Just to use one example of that. In the former East Germany, the walk man signal that got you across the street, the little green man famously had a hat on him, which is very unusual in the world of these things. And when the wall fell and Germany was reunited, the former West Germany wanted to make the signalisation standard, and eliminated the walk man with the hat. And there was a great up-cry from the former East Germany – how can you take away our beloved walk man? So this mundane thing that no-one would think about actually did have this resonance in the daily lives of people. [Gerry's note: Wikipedia has an interesting entry on the Ampelmännchen, or "little traffic light man".]

So I just think of that as almost a metaphor for traffic as this understated yet omnipresent landscape.

### **Gerry:**

What did Hans Monderman do that was so revolutionary, and why hasn't it caught on everywhere?

### **Tom:**

Well, Hans was essentially a provincial Dutch traffic engineer who unfortunately

died last January [January 2008]. He had a whole interesting theory which was to divide the world into what he called the traffic world and the social world. And the traffic world would be the autobahn, the high-speed German highway where you needed clear signs and strong demarcation and clear instructions for how users should behave. Then he talked about the social world which was more the areas in which people live. And he thought these were areas in which there were other situations to think about, and that people should actually know how to behave and not simply have to be told through things like excessive signage.

So he began going on this crusade to eliminate signs in many cases. He didn't do this willy-nilly, he thought about it quite carefully. The most famous example is a city in the Netherlands called Drachten. There was a four-way intersection with traffic lights, a standard sort of thing that was neither very safe nor very efficient in moving traffic.

His first idea was, well, let's change this into a roundabout. Most people the world over are becoming more familiar with roundabouts, and seeing their benefits. But then he went a step further and thought, well, Dutch people know what to do when they come to a roundabout, why do we need... And to describe this place beforehand, you had to think about all sorts of zebra-striped poles and markings and pedestrian barricades, and all the stuff that had been put up, ostensibly in the name of safety over the years but arguably was not really doing that much for safety. So, let's strip all this out, people know how to behave, this is a social space as much as anything, let's see what happens.

This was more than four years ago now and the before-and-after studies show that quite clearly the safety or the efficiency of the

intersection for any user has not been compromised. You can find some images on YouTube, it really is organic social behaviour where people are slowing down, looking at each other, taking into account what they're going to do, rather than relying on these abstract signs and symbols, which arguably do work in other environments...

That's quite a revolutionary task that he undertook because this really goes against decades of mainstream traffic orthodoxy, and you sort of do this at your own risk, and there's a constant spectre of lawsuits hanging over you... What if someone drives through at 60 miles an hour and kills someone? But that, strikingly, has not been the case, and his mantra is spreading slowly but has definitely moved to other areas.

**Gerry:**

There was another quotation in the book that really struck me: "Traffic messes with our heads in strangely paradoxical way. We act too human, and we do not act human enough." Can you tease that out a little bit for me, I wonder?

**Tom:**

In some ways I have a whole theory, when we talk about something like road rage or aggressive driving, a lot of it has to do I think with certain... We're missing certain important human signals that we depend on a lot in our everyday lives.

Just to take one example, there's something that may seem a bit banal and obvious but it's quite profound, which is eye contact. It's been argued by biologists that one reason we even have so much white in our eyes, what's called sclera, unlike other primates, is so people can see where we're looking and essentially gauge that we're making eye contact, because we probably want them to do something or we're seeking their cooperation or we're engaging

them. So, it's just one of these things that when we're driving around we don't really... We lose eye contact and we lose the ability to speak and many other things... We're stripped of these important signals and we're thrust in an anonymous environment. So I think that, based on other work we've done in psychology, going back to Philip Zimbardo and the other classic studies of the 1960's, I think we become more willing to do violence or act more aggressively to other people in traffic because we're missing these signals, and there's no accountability at the end of the day for the way we behave.

On the other hand, I was talking to a designer at Toyota who a number of years ago at the Tokyo motor show had introduced a system by which there would be human traffic signals on the back of a car. If you cut someone off, essentially by accident, you didn't see them or something, you could apologise, you could wink, you could smile, you could frown. If you think about a car, you're remarkably limited in the number of expressions you can make. You can flash your lights, you can try to honk, which gives way to a lot of misunderstanding, and the idea is that if you could have this more human range of emotion and expression, this might lead to more amicability on the road.

On the other hand, I think, in some ways, traffic as a big highway flow system, when we talk about physics and things like that, in a way you want anonymity. Because you might have cases where people are actually escalating their aggression because someone doesn't like the signal that someone else has sent. So if they can't even handle something like a turn signal, why should we give them more signals?

But people are crying out I think for this range of expressions. Even something like a honk... You sort of want to nudge someone

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on the shoulder – “Hey the light has turned green”. So you try to tap it and sometimes you press it too hard and then you’re worried that you’ve indicated you’re honking aggressively at them. I think we’re always trying to communicate like humans; whether we always should... it’s an open question. Maybe in certain situations it would be better. Again I talk about the social world versus the traffic world. It just, again, shows some of the complexity of issues that are going on when you try to think about this stuff.

### **Gerry:**

As a follow-up to that, another quotation from the book is: “Sometimes we come across little moments of humanity in traffic, and the effect is powerful.” Why do you think that effect is so powerful?

### **Tom:**

It was argued to me that if you think of humans as having lived for much of their evolutionary history in these small groups of hunter-gatherers, that there was a strong sense of reciprocal altruism that existed. You know, if a person of your group said “Can I borrow your spear?” and then you would say “You borrow mine next week” and you were doing things for each other – I’ll scratch your back if you’ll scratch mine. And then as we evolve into larger societies, we come up with other mechanisms to try to recreate this or simulate this, some of which are more powerful than others... This little moment – you’re being waved in, it’s utterly random, it’s very trivial. You know, so what, someone’s... letting you merge in ahead of them, it’s saving you a few seconds. But you do find this amazing feeling of goodwill surging from within you and, you know, the world’s a great place, this person is letting me in. Even though it’s very trivial. And of course what’s also interesting is the opposite reaction seems to be much more powerful, however. If someone were to cut you off

you would feel that much more harshly toward them.

And this taps into some studies that have been done, looking at experimental games involving giving and taking. When people had things taken from them, they... seemed twice as likely to want to punish someone as when they were given things they wanted to reward them, if that makes sense.

So the will to punish, perhaps to enforce these sorts of social norms that go back to this old small-group hypothesis does seem stronger. Maybe it’s a more efficient way of doing things and it’s more vital to our survival than the kind of altruistic side. Again, I find it’s out there, and we feel it, and whether it’s that or something else, it’s undeniable.

### **Gerry:**

Tell us about modal bias. It’s something that most of us who cycle occasionally would know a lot about, I guess.

### **Tom:**

This term was suggested to me by someone here in New York. I think New Yorkers... well, most people can relate to this quite easily. Basically, whatever mode of travel you’re in, people outside of that mode suddenly become, if not quite the enemy, they become sort of contrary to what you’re trying to do and basically getting in your way and you become very... egotistical to that mode. It was shown quite wonderfully in a 1950’s Disney short called “Motor Mania”, in which Goofy the dog begins life as Mr Walker. He’s a nice guy strolling down the street whistling a tune. Then he gets into his car and immediately turns into a homicidal maniac, trying to run down everyone, all the other pedestrians – of which he was one, himself, a few minutes ago.

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I was just experiencing this the other day as a cyclist going across the Brooklyn Bridge to Manhattan. The Brooklyn Bridge has one promenade which has a stripe down the middle. On one side the pedestrians walk, the other side the cyclists go. However, a lot of tourists are on the bridge and people don't understand what the norm is, and there's a lot of mingling. You feel a lot of tension, and it's not simply a matter of car versus pedestrian or car versus bicycle, it's also a matter of bicycle versus pedestrian, because you do find these bikes, including myself, moving at a faster speed. Maybe it's a simple matter of some sort of etiquette has been breached here. I almost think there's something to do with that increased speed, and the machine... It sort of changes the way you feel about the world, it changes the way you experience it and you begin to lose the ability to see the world from the other mode of the pedestrian. Even though, you know, we're all pedestrians.

I find this happens all throughout traffic. In certain areas of course the modal bias is overwhelming, and everyone is basically driving a car and if you're a pedestrian, good luck! Because no-one will be able to relate to you at all. These are the sorts of environments that are most dangerous to pedestrians.

Another example would be if you're a cyclist in the Netherlands it's a paradise because there's so many cyclists. It's not only great among cyclists, it's great the relationship between drivers and cyclists because there's so many of them, and I think they can begin to relate more just because they have to deal with them on a daily basis.

But I do think, again, this modal bias is real, and another thing that we deal with as we're moving around.

### **Gerry:**

I think you've already addressed this very much today, but there was another quotation from the book, by Henry Barnes, traffic commissioner in New York in the 60's who said that traffic "was as much an emotional problem as it was a physical and mechanical one". Is that view... has it been well accepted among traffic engineers globally or is there still an engineering, an overwhelming engineering approach to traffic management?

### **Tom:**

I think it's evolving somewhat. The engineering is still definitely quite strong. Engineering is only one layer, and you can build the best highway in the world but there's all these other layers that go into that – culture, what's legal, enforcement situation, what's the driving education culture, how long have people been driving for. But you know, one interesting way that engineers have been trying to address real human factors engineering in what they do is... One example of this would be called the psychological traffic calming. The old school traffic calming was, basically which evolved from the Netherlands in the 1960's, was to throw up a speed bump, these massive chunks of curved concrete in the middle of the street. Drivers hate them and they seem to bring unintended consequences of drivers speeding up between the bumps. A more subtle way is to do things like make the street narrower, change the pavement, try to adjust drivers' behaviour without them even necessarily realising that they're being... manipulated... toyed with, basically.

A great example of this is in Lakeshore Drive in Chicago, which is an urban boulevard that is right on the lake. Drivers treat this like an urban highway. They drive too quickly, and for many years on one particular stretch there's been a crash problem. So engineers immediately

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responded by putting up more signs. That really wasn't helping things. They tried to put up larger signs. Then they added flashing lights to the larger signs, and still the crash rate was not really being reduced. So the final approach, [the] most recent approach, has been to paint these sort of optical transverse bars on the pavement that grow shorter in distance to one another as you get closer to the curb. So you have this strange sensation that you're driving faster than you really are. It's also almost just a sense of confusion and that's the confusion inherently I think that makes you slow down. So it's very subtle manipulation. This has been referred to as a behavioural nudge by Cass Sunstein and Richard Thaler in their book "Nudge".

**Gerry:**

What cities are doing it well these days, do you think?

**Tom:**

In terms of managing flow or...?

**Gerry:**

I guess in terms of having better cities to live in, where the traffic is a beneficial part of the city rather than something that's a nuisance and a stress factor for those in the traffic and those around it.

**Tom:**

[Laughs.] I suppose it depends on what mode you're transporting in. It's an interesting question, though, what the future of the city in particular is going to look like. Is the city of the future Copenhagen, which has seen its actual driving share into the centre city decline over the last few years and its cycle share reach a new height? Or is it a place like Beijing, in which the cycle has been giving way to the automobile and an ever-increasing series of ring-roads? Some people see China as the future, or is Denmark the future? It's a very complex

equation as to how traffic shapes out in the city.

We can look at some of the worst examples, which would be a place like Caracas, Venezuela. There's a couple of reasons why. There's not a great public transportation system, and another great reason is that fuel is quite heavily subsidised. It's on the order of 30 cents a gallon, so there's little inclination not to drive.

You know, urban traffic has been a problem going back to the time of Rome during Caesar basically. Some people have argued that maybe it's just an inherent condition of cities, that they should be congested places. Other people have argued, well, congested maybe but not by cars. It's complex.

**Gerry:**

It's funny, I noticed that Forbes magazine rated Copenhagen as a very nice city except for those damn bicycles that were in the way of everything.

**Tom:**

[Laughs.] Again, you know, modal bias.

**Gerry:**

Tom maintains a blog on this subject on [howwedrive.com](http://howwedrive.com) and I highly recommend his excellent book, "Traffic: Why We Drive The Way We Do (And What It Says About Us)".

Tom Vanderbilt, thank you for joining me today on the User Experience podcast.

**Tom:**

Great to be here, Gerry.

**Note:**

Thanks to Mikael at [Copenhagenize](http://Copenhagenize.com) ([www.copenhagenize.com](http://www.copenhagenize.com)) for making me aware of Tom's book.



### **A note on the transcripts**

We make verbatim transcripts of the User Experience podcast. We then edit the transcripts to remove speech-specific elements that interfere with meaning in print (primarily space-fillers such as “you know...”, “um...”).

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