

## Tickled Rats and Human Humor

Norman N. Holland

University of Florida

We humans laugh. And there are few things in life more pleasurable than a good, long belly laugh.

Furthermore, we humans all have this same physical pattern for laughing. Florida professor or Australian aborigine, our facial muscles and our diaphragms and the rest do the same things in our bodies.

A really big laugh involves a host of body systems. Fifteen separate muscles pull the lips into a smile. The diaphragm spasms, forcing air through the epiglottis and larynx to make the ha-ha sound. Tear ducts are activated and our eyes "run." In extreme cases, the bladder's sphincter relaxes, and we say, "I laughed so hard I wet my pants."

Relax. Uncross your legs. I am not going to make you laugh with this paper. I know you expect this paper to be funny, but it won't be. There is nothing drearier than explanations of jokes or why we laugh. So I don't want to hear any laughing out there. I will take that as a sign that you are not getting the point of this paper which is that laughter is a serious business or, to put it more accurately, no laughing matter.

\* \* \*

I'd like to read to you from a 2003 paper by Jaak Panksepp, the senior author, and Jeff Burgdorf. Panksepp and some of his colleagues had noticed that rats would emit a 50-kHz squeak after/during?

sexual intercourse and during play sessions.

Then, during the spring of 1997, the senior author came to the lab, and suggested to the junior author, "Let's go tickle some rats." This was promptly done. [Notice the passive voice. That shows you the paper is scientific.] This was promptly done with some juvenile rats that had just finished a play experiment. We immediately discovered that the emission of 50-kHz vocalizations more than doubled over the levels we had seen during their own self-initiated play activities. To all appearance, the animals enjoyed this tickling which simulated their own playful activities. We promptly shifted our research priorities to an intensive analysis of this response.

Eventually, the authors logged 1000 distinct tickling episodes. Your tax dollars at work.

The authors had some difficulty in publishing their work--I can't imagine why--but the BBC and the Discovery Channel picked it up, as did New Scientist magazine and People magazine. As a result, Panksepp received a lot of mail from rat-fanciers who were experimenting on their own. Let me quote from one of them:

After seeing the Discovery special, I decided to do a little experimenting of my own with my son's pet rat, Pinky, a young male. Within one week, Pinky was completely conditioned to playing with me. Now, the second I walk into the room, he starts gnawing on the bars of his cage and bouncing around like a kangaroo until I tickle him. He tackles my hand, nibbles, licks, rolls over onto his back to expose his tummy to be tickled [that's his favorite], and does bunny kicks when I wrestle with him. . . . My family thought I had lost my mind .

Now pretty clearly the rats are not laughing at a joke, just at being tickled. We can't say they have a sense of humor--or can we? I corresponded with Panksepp about this work, and he suggested that perhaps a rat would laugh if, outside of its cage, we hung a cat up by its tail. But ultimately he concluded, "In sum, although we would be surprised if rats have a sense of humor, they certainly do appear to have a sense of fun" (241).

\* \* \*

Tickling is one kind of laughter. Laughing at jokes is completely different: it is non-physical, mental. But is it different?

Now, as it happens, I've been puzzled by laughter at jokes, ever since I was a boy. I used to wonder why my schoolmates and I found different things funny. And in 1982 I published a book about laughter which, naturally, ended with a theory of why we laugh at jokes. The evidence for my theory was a case study of a young woman, a student and friend, named Ellen.

Ellen agreed to look at some cartoons by B. Kliban that she found funny and talk about why she found them funny, in effect, to free associate to the cartoons. By the way, these cartoons are pretty gross and many people don't find them funny at all but ugly and repulsive. But Ellen thought they were funny.

Ellen saw the cartoons as giving something to her, a confirmation and reassurance for her own overly critical way of seeing the world. She said it right out, "this book proves that somebody else sees what I see." That was why she found these cartoons funny when many people do not.

Ellen had--and we all have--a personal "sense of humor." Any given comic writer would fit her particular sense of humor or not, as the case might be. Her enjoyment of Kliban's cartoons was embedded, as it were, in her larger, individual pattern of responding to literary and artistic works, of making them give her what she characteristically wanted. And literary response in turn is embedded within her larger quest to continually re-create her identity: to gain the kinds of pleasures that were particular to her; to cope with the world and with her own inner reality in her own characteristic way.

Ellen was able to work an ugliness that was at first cognitively or emotionally discrepant into her own habitual and everyday mental functioning. She "made sense" of Kliban's art. Now, we do this with any language that is literary, in effect, out of the ordinary, unusual. But with a joke or a cartoon, the discrepancy, the unusualness, is more extreme. We resolve it with a suddenness and that leads to joke-laughter.

In terms of a definition of laughter, because these cartoons were only cartoons, they called for

no action on Ellen's part. They were "playful." And because they were cartoons, they allowed the sudden understanding and mastery in her brain of the intellectual incongruities and aggressions at which we laugh.

That was my explanation of joke-laughter. We each of us have a personal style or identity. Part of that identity is a personal sense of humor. We laugh at a joke when it allows us to confirm -- suddenly and playfully--that personal sense of humor.

\* \* \*

Now my book on laughing was published in 1982, but it was swamped by a book called Laughter published in 2000, by Robert Provine. Once Provine's book appeared nobody paid any attention to mine. Why? Because Provine stood the world of comic theories in its head.

Provine showed that, in fact, when we laugh, it usually has little to do with jokes or wit. He concluded, from observing and counting people's interactions, that only about 15% of humans' laughter comes from things we would call funny. Rather, we laugh most of the time as a result of social interactions. By way of example, Provine lists some lines that elicited laughter: "I'll see you guys later." "I should do that, but I'm too lazy." "I told you so!" And speakers of these memorable lines, these thigh-slappers, laugh more than their hearers.

Pretty clearly, this kind of laughter serves as a kind of social bonding, a way of saying to our fellow-hominids, I mean no harm. I am friendly. And we the hearers want to say, I am friendly, too. So we laugh. You can see this kind of laughing all the time at this conference.

\* \* \*

So far, then, we have seen three reasons why we humans laugh. One, we can laugh at a joke or a cartoon. . Two, we can laugh as a way of saying to other people, we are friendly. Three, we can be tickled like the rats. And, by the way, apes and monkeys laugh like us in response to tickling they laugh if tickled. These three very different triggers for laughing show that the physical act of laughing is hard-wired in our brains and that it is part of our mammalian inheritance. Indeed there are chemicals that can cause laughter, laughing gas or marijuana. And there are diseases.

The neurological people agree that there must exist in the brainstem [THUMB DEMO] a final

common pathway, probably ventral, for laughter that integrates facial expression, respiration, and autonomic reactions. Probably we have cortical control or inhibition of this ancient system, and the diseases or chemicals that cause laughter reduce that control or inhibition. But why do the three cognitive reasons we have seen so far reduce that control or inhibition?

\* \* \*

Social laughter; joke-laughter, and laughter from tickling--they all lead to one result: the physical act of laughing which is pre-programed in the brain. These three stimuli to laughter must therefore all share some common feature. What is that common feature? Can we find a common psychological cause that would serve as the trigger for the single physical process. I think we can.

Let me go through three current theories: one from the neurologists; Freud's theory, and then the ultimate right answer, my theory.

Current psychologists and brain researchers use two stages to describe something's being funny and causing laughter. This would be joke-laughter. The neurologists, by and large, speak of surprise followed by coherence (Suls 1972; Brownell 1983). First, there is some kind of disconfirmation of expectation, some kind of novelty, some kind of incongruity between the punch line and what has gone before. In the second stage, the perceiver engages in a form of problem-solving that makes the joke make sense. The perceiver figures out how the punch-line follows from what went before and reconciles the incongruous parts.

Now, how does this two-stage process tally with what Freud had to say about laughter? When people think about Freud and jokes, they tend to remember just the idea of expressing some repressed sexual or aggressive impulse. But his book, Jokes and Their Relation to the Unconscious (and a later follow-up article) presents a comprehensive theory of why we laugh. Freud actually dealt with three sources for laughter: he called them jokes, the comic, and humor.

You can distinguish them by the number of people involved. Joke-laughter involves three people: the teller of the joke, the person the joke is told to, and the person the joke is against. This is usually a character in the joke, the blonde or the redneck or the old lecher or the doctor--whoever. It can also be a public figure, politicians like George W. Bush or Jerry Falwell, the more self-important

the better. The comic involves two people. The comic is the kind of laughter we enjoy at watching a clown or a child or a puppy. The two people are the laugher and the person laughed at. And then there is humor, which Freud thought of as a kind of forgiveness of the self, a kind of philosophical self-acceptance. That only involves one person, you. And all three, he thought, led to laughter.

Freud tied all three of these together by the single idea of a mental comparison. That is, with the joke, we compare the effort or energy required to repress the taboo impulse with the lack of effort or energy when we allow ourselves to release the impulse by telling or hearing the joke. The comic, clown humor, he thought of as a cognitive comparison between the effort we see expended by the clown or the infant or the puppy and the relative lack of effort with which we would do the same thing. And finally, he saw humor as a comparison between the effort to earn forgiveness and the being forgiven easily with no effort at all. In all these cases, Freud thought the reduced expenditure of psychic energy, the extra energy released, went off in the physical action of laughter. But Freud made no effort to explain tickling and no effort to explain social laughing.

Notice that both the neuropsychologists and Freud are describing two stages. We could describe the surprise-coherence idea also as a comparison.

Provine, who discovered the importance of social laughter, does not offer a unitary explanation for why we laugh. He suggests further research, always a good thing for psychologists applying for grants.

I did offer a unitary explanation for laughing. I explained joke-laughter as a sudden, playful confirmation of your identity, which includes your personal sense of humor. I did not attempt to explain tickling, and I was quite unaware of the importance of social laughter.

\* \* \*

But I still want to ask the question, Can we bring all three of these reasons for laughing together. The surprise-coherence description. Freud's explanation through comparisons. The sudden, playful confirmation of of one's identity. What do they have in common?

I believe all three involve (ONE) a mild threat to our ongoing process of identity re-creation. And (TWO) a quick resolution of that threat, a demonstration that it was all play, no threat at all.

Those poor little rats! They are confronted with this huge human and his intrusive finger. But the human is benign, the threat to identity dissolves, and the rat laughs. That, pretty clearly, is also the rhythm of tickling in humans. The threat of a poke in the ribs that turns out to be no threat at all.

Provine's laughter seems to me to come from social situations in which a nervous laugher seeks to placate another person or a group to whom the laugher is relating. I mean you no harm--see? I am laughing. And the other person does the same. You mean me no harm? OK, I mean you no harm! All's well and we will signify that by social laughing. Again, a threat to identity dissolves into no threat.

Finally, joke-laughter. A joke comes to us as something new in our environment. Like any novelty in our environment, it could be a threat. So we have a faint feeling of anxiety.

What is that threat? Joke laughter or cartoon laughter begins with your being presented with a kind of intellectual uncertainty or (to use the traditional term in theories of laughter) incongruity. A joke momentarily threatens the thing you are doing all the time, every moment of your life: maintaining your own inner coherence around the themes that make up your identity. You are given something that does not fit comfortably into your ongoing mental processes.

Then you make sense of the incongruity (that is, you "get" the joke) and you re-establish your ongoing, continual process of identity re-creation. In neuropsychological terms, the laugher goes from surprise to coherence.

In short, I think that we can conceptualize all three: tickle-laughter, social laughter, and joke-laughter, as involving some kind of mild threat to the constant, ongoing process of identity re-creation and then a re-establishment of that process. That, to me, is the rhythm that leads to laughter: possible threat to my identity, threat resolved. And now you can reassure me and so remove any threat I pose and confirm your own identity by now laughing and applauding.