

Sunday February 19, 2012

## Parasites that pull our strings

By Jim Taylor

You probably think that you're in control of your reactions. Suppose I told you that a tiny parasite within your body was manipulating your mind, your emotions, your physical abilities?

You'd probably scoff. So did I.

Unfortunately, some serious research says that this parasite has more control over you than you expect. The parasite is *Toxoplasma gondii*, *Toxo* for short, found in feline feces.

Parasites typically have a primary host, and a secondary host. *Toxo* reproduces in its primary host, the common cat, and is excreted in cat poop.

Its most common secondary host, rats and mice, eat the poop. The parasite then burrows inside the host's cells, to avoid the body's immune defences, and clones itself umpteen times.

Obviously, the sooner a *Toxo* parasite can get back inside a cat, the sooner it can start its reproductive cycle again. So it rewires the rodent's brain to make it more catchable, by cranking up production of dopamine – a neurotransmitter that affects fear, sex, and attention.

*Toxo* rodents lose their natural fear of cats. They venture brazenly into the open. Infected rats even feel attracted to the smell of cat urine, like macho men to Chanel #5.

Hyper-sexuality helps too – piles of infected baby mice make easier prey.

## Human hosts

A whole range of warm-blooded mammals also carry *Toxoplasma gondii* – cows, pigs, dogs, and yes, humans. Children eat cat poop. Adults clean litter boxes and inhale dust. Or they pet their cats, and then wipe their noses or eat without washing their hands.

Our brains share many similarities with those of rats and mice. Can *Toxo* also affect us?

For a century, doctors have known that pregnant women can pass the parasite to unborn infants, sometimes leading to severe brain damage or death. *Toxo* was also blamed for the dementia that afflicted some AIDS patients near death.

Healthy children and adults, however, rarely experience anything more than brief flu-like symptoms. Conventional wisdom holds that once we fight off the parasite, it goes dormant.

But apparently it doesn't.

Jaroslav Flegr, a Czech biologist, started studying toxoplasmosis 20 years ago. He has now published a number of papers in prestigious peer-reviewed journals. Most recently he was featured in the *Atlantic* magazine.

Initially, the scientific community treated Flegr's ideas with scorn. But scorn has gradually turned to grudging respect.

Stanford's Robert Sapolsky, for example, says Flegr's "studies are well conducted; I see no reason to doubt them."

Similarly, E. Fuller Torrey, director of the Stanley Medical Research Institute in Maryland, calls Flegr's research "completely credible."

## Personality and performance

Interestingly, Flegr started studying people, not rodents. About a third of Czechs carry the "dormant" parasite. (Incidence runs as high as 55 per cent in France, because of their devotion to rare beef; under 20 per cent in North America.)

Flegr administered standard psychological tests to large numbers of Czechs. Afterwards, he tested them for toxoplasmosis.

He also tested their reaction times. Subjects who tested positive for the parasite had significantly slower reaction times. They were also less attentive.

Parallel studies of Czech drivers found that those who tested positive were more than twice as likely to be in traffic accidents.

Independent research of drivers in Turkey replicated Flegr's findings. With one-third of the world's population infected, Flegr suggests, *Toxo* could contribute to millions of road accidents annually.

*Toxo* carriers also diverged from the uninfected population in personality. Oddly, though, it affected men and woman in opposite ways. Males became more introverted, suspicious, cantankerous, and sloppy. Women became more outgoing, trusting, conforming, and image-conscious.

These findings were so unexpected that Flegr assumed his data must be flawed. So he tested other groups—civilian and military populations, old and young.... Again, the same results.

One experiment asked participants to drink an unidentified liquid. Control groups were cautious. Infected men resisted strongly, imagining malevolent intentions. Infected women quaffed the drink without question.

Unlike rats and mice, the parasite derives no benefit from altering human behaviour. But it's too stupid to know that.

## What else?

If a parasite can, in fact, affect our reasoning, our emotions, and our reflexes, what about other parasites?

Almost everyone accepts that many personal characteristics – from eye colour to height – are genetically determined. Some scientists describe our bodies as DNA's vehicle for replicating itself.

But if tiny strands of DNA can shape our bodies, if a single parasite can influence our actions and reactions, wouldn't every other parasite also attempt to amend our behaviour for its own benefit?

"My guess is that there are scads more examples of this going on in mammals, with parasites we've never even heard of," agrees Stanford's Sapolsky.

"There is strong psychological resistance to the possibility that human behavior can be influenced by some stupid parasite," Flegr admits. "Nobody likes to feel like a puppet."

People used to excuse their sins by saying, "The Devil made me do it." Today, they might say, "My parasite made me do it."

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## YOUR TURN

The mailbag this last week was quite varied, because I asked about the recent cancellations of subscriptions, as well as posting information of current columns.

Ruth Zenger: "Maybe your columns have had more disturbing topics lately. I have found them informative and encourage you to continue. I like to receive various opinions on issues of merit. I do not have to agree with anyone's reasonable expression of their view on an issue.

"I do think you have a good segue on anti-abortion growing from attempted subjugation of women. There is no evidence that Jesus 'subjugated' women, in fact he treated them like 'real people' in a culture that did not!"

Isabel Gibson agreed: "You should provoke some reaction with this one! I've written on abortion too and my 'stance' is that abortion is not merely about women being free to control their own bodies, but that free access is the best of a bad set of options.

"I don't disagree with your analysis of the patriarchal nature of the current posturing. Maybe patriarchy at its best is about protecting those you see as weaker than yourself (at its worst, perhaps, at controlling those you see as less than yourself). I wonder whether the next phase for women is to move past our (justified) historical sense of victimhood to start to give more weight to taking care of those weaker than ourselves – [which would include] the unborn."

Steve Roney defended Rick Santorum's characterization of Planned Parenthood: "The problem is that Planned Parenthood really is the No 1 abortion provider in the country; and this is a big problem for many religious people. The 3% abortion figure you cite is debatable; it is not 3% of women who go to Planned Parenthood who end up with an abortion from them; it is more like 17%. On top of that, it is a major political advocate for 'choice,' i.e., abortion, and a highly political organization. Which this fight by Planned Parenthood against Komen demonstrated very well.

"It is also, as you note, a major advocate for and distributor of contraception and contraceptives — this and abortion, as the name suggests, are its *raison d'être*. Accordingly, giving funds to Planned Parenthood would be a moral problem for any Catholic donors to Komen -- in theory 27 percent of the US population -- and for many evangelicals as well. It just makes sense that Komen would want to avoid losing these donations for the fight against breast cancer; and it is only behaving decently towards these donors to pull funding to Planned Parenthood. Does this reduce its services to women? Only if they do not spend this money elsewhere."

Jim McKean, on the other hand, had little sympathy for Santorum: "The Santorums of this world must be very upset with you. Two weeks ago, during the Florida primary, Rick Santorum suggested that it was a no brainer that Obama was supporting post secondary education -- in places like college and university they all taught those liberal ideals that Santorum and the Republicans are against. I say the reason why Santorum and the Republicans are against education, and other rights, is because they want to dumb down the electorate. A dumbed-down electorate will make it easier for a few to control the majority.

"By the way I refuse to do a marriage ceremony that includes the question 'Who gives this woman away?' I explain this right up front when the couple first come to see me. As the father of three daughters I never thought of them as chattel, and I as they were growing up I taught them through word and action that they were equals."

Joan Carr: "As one now in her 9th decade I find it difficult to admit to have been offended by the feminist movement when it began so many years ago. I used to say "why would I want equality when I am superior?" It has taken me a long time to become aware of how some men treat their female family members. I was born into a family where women were revered and expected to be "higher" mortals than their male counterparts. My father was a man of love ... and my husband also .. Gradually I discovered all was not as I thought it to be, so in senior years I have been able to change my outlook and now heartily endorse and uphold many causes in the attempt to create a world without sexist profiling. My hope is that those of either sex, who persist in attempting to manipulate, may be changed into realizing they have no right to force change for others life choices.

Chuck Johnson thought last week's column was "Right on, Jim! I cast my vote for the irresistible force! Thank you for the clarity of your presentation and the good sense in your thinking."

Marie Avey, in what I think is her first letter to this forum, commented, "Thank you for connecting the abortion debate to women's rights, where I believe it belongs. I do wish, however, that you had chosen Dr. Emily Stowe as Canada's first significant suffragist. She precedes Nellie McClung by a generation or more. Emily Howard Jennings Stowe was born in the Norwich Quaker settlement, the great-granddaughter of settlement founder Peter Lossing. Although she was not a Quaker all her life (she married a Methodist) she embodied Quaker values which included the equality of women. Refused admission to the University of Toronto she went to New York State to receive her medical education and there she became acquainted with Susan B. Anthony and was caught up in the fight for women's suffrage. When she returned to Canada she established a women's literary society in Toronto. She and her co-workers campaigned for the right of women to vote, first concentrating and winning the right of single women property owners to vote municipally. We often forget that that was a necessary first step. Unfortunately she died about 1902 and did not see the final battle won, but she did campaign tirelessly for many years and on her death Susan B Anthony wrote to Dr. Augusta Stowe Gullen, Emily's daughter and the first woman doctor to graduate from a Canadian Medical School: 'Your mother was a true pioneer.' Emily's efforts to gain the vote for women began in the 1860's and continued until her death which resulted from a fall from a public platform when she was making an impassioned speech for the cause."

And there were a lot of letters of reassurance about my columns in general.

Charles Hill wrote, from Texas: "I haven't been with you long and don't intend to quit. I suspect that those whom you are losing are very politically conservative and Biblical literalists. For some, there are things you just don't discuss. Try going into most churches and opening a discussion of exactly how the Bible we have was canonized!"

Old friend John McTavish offered consolation: "It could be a fluke that so many people unsubscribed at the same time, or perhaps it has something to do with the Republican mindset during an election year ( not that you have been going out of your way to antagonize the right). Anyway, I think it's their loss and it would certainly be a shame if you folded your cards and went home. Perhaps something my old friend John Updike once said pertains here: 'For a book to be good it is not enough for it to be good; the reader has to be ready.'"

Cliff Boldt: "Jim, in some columns, you hold a mirror up to your readers. Some don't like what they see in the mirror, but can't bring themselves to accept what they see/are. Easier to push the mirror aside. A good friend of mine said, many years ago, 'If you want to be liked by everyone, do nothing'. I hope you never feel the need to be liked by all your readers."

Ian Otterbein: "I would not say the quality of your columns has deteriorated. I would think that if some people are upset by something specific that you said they would have made sure that you knew why. If you have been pushing their buttons (challenging their thinking) for some time they might just ask to be taken off the list.

"Or maybe they are just trying to reduce the amount of email they are receiving."

Nancy Kerr: "Perhaps recently you have been more pointed in the use of particular, current news. The last two have been about culture clash and women, and that might ruffle some feathers."

Another first-time writer, Myrla, wrote, "I find your column very interesting. Always gives food for thought. I also enjoy hearing the comments from others on the various subjects. I don't think you need to worry -- it must be the February blahs!"

Mary Anthony, a Lutheran priest in Portland, Ore., wrote, "Can't really answer your question; I continue to find you neither blah nor offensive (though sometimes provocative, but I signed up for 'Sharp Edges' at risk of being provoked). But you asked for feedback, so here's mine -- I would turn to my inbox much less eagerly if you were not in it."

Judith Fetter said much the same: "I love your columns, though I don't often send in any responses. I like the responses too - they add depth and insight to what has already had lots of both! I don't know why people would want to unsubscribe -- but I certainly don't want to!"

Bill Peterson: "My feedback is in full support of whatever you write and, specifically, when you call to our attention to human inequities, iniquities, injustices and other foibles of human imperfections. I may have written this before but I keep remembering the closing 'signature' statement by Harlan Miller, columnist (deceased) for the Des Moines, IA, Register. "There is no solution. Seek it lovingly."

Finally, Charles McKenzie had some further thoughts about the previous week's column, on the so-called "honour killings": "In the book 'Writing Off the Rural West' there a chapter by Cameron Harder titled "Overcoming Cultural and Spiritual Obstacles to Rural Revitalization". Mr Harder sees honour very much a part of the rural west. Honour and shame may not be talked about much [or even recognized: JT], but it is one of the foundation stones of agricultural life."

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## **ABOUT MY BOOKS, ETC.**

I still have a few copies of a book my father wrote exploring Christian theology through Christian art.

The problem with art, of course, is that it cannot put an abstract concept on canvas. An artist cannot paint an Incarnation or a Resurrection without putting real humans, in real situations, into the picture. The expression, therefore, has to be grounded in a particular culture and society; the infinite and universal has to be represented in finite terms.

My father – who once took art lessons from members of Canada's Group of Seven – spent much of his life after retiring as principal of the Vancouver School of Theology, seeking out the ways artists through the centuries

had attempted to deal with this dilemma. I'm probably biased, but I think that in examining the ways art portrays theological concepts, he explained those concepts better than most theological texts.

The book is *Seeing the Mystery: Exploring Christian Faith through the Eyes of Artists*, by William S. Taylor, 94 pages. There are only about 20 copies left in the world. Most of the illustrations are in full colour.

If you would like a copy, write to me – Jim Taylor, 1300 6<sup>th</sup> Street, Lake Country, BC, Canada, V4V 2H7.

Unfortunately, I can't send these out on the honour system, as I do with my biblical paraphrases. I will have to charge \$30 Canadian to include postage, paid in advance.

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## TECHNICAL STUFF

This column comes to you using the electronic facilities of Woodlakebooks.com.

If you want to comment on something, send a message directly to me, at [jimt@quixotic.ca](mailto:jimt@quixotic.ca).

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You can access several years of archived columns at <http://edges.Canadahomepage.net>.

I write a second column each Wednesday, called Soft Edges, which deals somewhat more gently with issues of life and faith. To sign up for Soft Edges, write to me directly, at the address above, or send a note to [softedges-subscribe@quixotic.ca](mailto:softedges-subscribe@quixotic.ca)

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## PROMOTION STUFF...

If you know someone else who might like to receive this column regularly via e-mail, send a request to [jimt@quixotic.ca](mailto:jimt@quixotic.ca). Or, if you wish, forward them a copy of this column. But please put your name on it, so they don't think I'm sending out spam.

For other sources worth pursuing, try

- David Keating's "SeemslkeGod" page, [www.seemslkegod.org](http://www.seemslkegod.org);
- Alan Reynold's weekly musings, punningly titled "Reynolds Rap" -- [reynoldsrap@shaw.ca](mailto:reynoldsrap@shaw.ca)
- Isobel Gibson's thoughtful and well-written blog, [isabel@traditionaliconoclast.com](mailto:isabel@traditionaliconoclast.com)
- Wayne Irwin's "Model T Websites." a simple (and cheap) seven-page website for congregations who want to develop a web presence <<http://www.modeltwebsites.com>>
- Alva Wood's satiric stories about incompetent bureaucrats and prejudiced attitudes in a small town are not particularly religious, but they are fun; write [alvawood@gmail.com](mailto:alvawood@gmail.com) to get onto her mailing list.

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