

Oh, poop

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So far, over almost eight years, I've dealt exclusively in one way or another with things we ingest. Today, it's time to take a look at the other end of the story with Donald Worster, is a retired professor of history who grew up in the fifties on a small place in west Kansas.

Donald Worster: We had a backyard privy, we had a backyard toilet, we were poor people, we were working-class people on the outskirts of a small town. The streets were dirt and there was no sewage system and all the rest. I lived — winter, summer — around the experience of basically outdoor plumbing. Maybe that's why I'm so interested in the subject today.

Worster is the author of an essay called *The Good Muck: Toward an Excremental History of China*.

Muck, in this case, is basically faeces, mostly human, with maybe some urine and other nasties thrown in for good measure. Chinese agriculture depended very much on recycling this muck back to farmers' fields. One of the first detailed accounts to reach the west of how the system worked, was written by Franklin King in around 1911. King's book is called *Farmers of Forty Centuries*, which has a nice ring to it as a title. But have the Chinese really been recycling their muck for four thousand years?

Donald Worster: I think it's much less than that. I don't think we can find any traces certainly before 3,000 BCE probably, according to my own friends who do agricultural history in China, the earliest real records are about 2,000 years old.

The growth doesn't take place till much later. It's really in the time of the Song dynasty, which is about 1,000 common era — Medieval Europe — that it becomes widely [used], not just by a few, for the common farmers of China. I don't think it really becomes significant ... so we're really talking about 1,000 years ago not 4,000.

Jeremy: Faeces, urine, all mixed together. It's not a nice substance. How did the Chinese come to be using it on the land?

Donald Worster: The reason that I think it developed so strongly in China ... I don't know the history of its usage all over the world but I know in Europe, of course, human excrement has been used but I don't think to the same extent, with the same developed economy [that] came about in China what we might call the faeces economy. I think it developed in China first of all because of its great agricultural foundations.

China developed one of the world's biggest and most dense populations. More and more people packing on in the land. China has always had a fourth or fifth of the world's population. It far exceeded any of the older agricultural societies and civilizations. You just can't keep doing that. You can try to alleviate it by migration. The Chinese have been migrating all over their landmass for thousands of years.

The Chinese finally run out of lands. They are hemmed in in some ways by so many other countries, empires and China is an extremely mountainous country. I didn't realize the mountains of it till I actually went there. I didn't have that image at all, not for most of the China. But everywhere you turn, on the horizons it seems there's a mountain. Their arable land was always short compared to, say, the United States or probably France, I don't know.

Per capita, they were always short of good soils, good land for agriculture. Their population just kept growing and growing no matter what they did. People were having five and six children, and that's pretty common. Too many of them were surviving for the families to just continue, so they had to do something. They did not have much room for livestock. There was a shortage of farm animals.

Jeremy: Clearly, there was enough food for this growing population ...

Donald Worster: Well, they had to feed themselves but ...

Jeremy: Which came first, the surplus of food. or the surplus of people and their excrement?

Donald Worster: I would strongly argue, along with Ester Boserup, the Danish economist, that it is population growth that pushes innovation, pushes change. Of course, once you get the change in place — if it works well, if it's a good change — it will allow you to go on increasing and could even lead to a population explosion.

I think it's a two-way process. More people they want their babies to survive. They want babies for lots of reasons. We all want babies. Everything in nature wants babies. The great thing about the human species, and the Chinese were really great at this, was innovation, ideas. How can we do this differently? We're always finding our way out of the trap.

Jeremy: This faeces economy, how does it develop?

Donald Worster: Well, I think it develops from two sources. One is the continuing population on the farm, and people begin to leave and they begin to settle in cities. Urbanization begins really early in China. You get cities, by the Ming dynasty, that are in the millions of people. Cities that Westerners don't even know about. We don't even know their names or if we do they are not familiar to us. Hangzhou or Suzhou. And those cities have got all of this excrement from these people and they don't know what to do with it. It's piling up on the streets. It's really a mess.

Many of these people that are coming to the cities come from the countryside, of course. They all have. They're familiar with the use of fertility, and networks of trading — commerce and collecting and distribution — begin to develop. An economy based on poor peasants, uprooted from the land, living in the cities, trying to make a living, and they turn to this. They deal with this stuff. They go around from house to house picking this stuff up in the early morning, night soil they called it, and take it on wagons or carts or just simply in buckets on their shoulders down to a riverbank and putting it on barges.

They would paddle those barges up and through the canals to where farmers lived and they would sell it to them in villages or farm to farm. King describes them as a kind of gondoliers. Venetian gondoliers, they have great voices. I'm sure these Chinese guys were singing too. In fact, I think there's some record that they sang songs. They're singing as they were pushing their way up and in and out of all these canals with huge mountains of muck in their gondolas. That's how the economy develops and then it develops grades and grades of qualities of manure and animal manure, all of it different prices.

Jeremy: They're performing a service for the city and presumably for households too; are they getting paid at both ends? Is the city paying them to clean up? Are people paying them to take the muck

away? Or are they just performing a service because they get paid at the other end?

Donald Worster: I am not sure about all the intricacies from town to town. These people are extremely poorly paid. It's bare survival subsistence wages. The organizers of all of this may have contracts. I don't think the cities themselves are involved. I think this is purely private entrepreneurs. People wanted to get rid of it. We're not paying them because this was a marketable commodity any more than you would pay somebody to take away your bottles and cans, if they could make money out of it.

Jeremy: I do, I pay garbage taxes.

Donald Worster: That's because the price of the stuff that you're putting into the refuse is so low for the recycling world, that there's no money in it, so finding a way to make a profit out of it is difficult. For these early muck collectors in cities, they had a market. These farmers are desperate for any kind of excrement.

I tell this story in the essay of a man in a village who was a brilliant entrepreneur. He decided his village needs an outhouse, a very nice, fancy toilet. They whitewashed it inside and out so it looks clean inside. It's just two holes in the ground I think, but he also provided toilet paper. It may be the Chinese who invented toilet paper. Anybody who's on the road passing, travelers from the city, to merchants, anyone has a free use of this place, free use, free public toilet with toilet paper. Then this guy collects and sells it and makes a profit. He's collecting fertility and nutrients from everywhere.

Jeremy: In the big cities, in these giant urban centers, were they providing public amenities of this sort?

Donald Worster: Not until later. The only city I know where anybody has really done some studies of this is the coastal city of Tianjin which was a treaty port. All the European powers were there and had their sections. There was a British bit. There was an Italian section. A big city on the coast not far from Beijing. They had a very well organized system by the 19th century, later 19th century. They had a well-organized system of public toilets. You and I probably would not want to visit one of these places, but for people at the time, this was a breakthrough.

Jeremy: Did individual collectors have access to specific public toilets?

Donald Worster: Well, the city essentially had a kind of privatization of all of it. They didn't build the toilets. They contracted with various entrepreneurs and these guys would set up a system or chain of toilets in their neighbour and they had big battles and fights over territory and market and so forth. They were pretty ... In some cases in the early years, they were pretty shabby. They were just an outdoor place with matting and nothing needed to keep out the cold winter winds and little children in danger of falling into these places, and on and on.

Then, the local people had to pay something small, but nonetheless, some kind of pittance to use these public facilities because they had no indoor facilities, no closets to go into and no sets of chamber pots like the aristocracy or the wealthy people would have.

Jeremy: It was basically the streets or nowhere?

Donald Worster: Yes. Of course, the bourgeoisie of China did not want it on the streets, especially in front of their house. They were quite behind all these projects to get something done, to clean this up. China had terrible urban water pollution problems, as you can imagine, from all of this pollution, that just seemed to be endless. It just grew and grew and grew, and nobody knew what to do with it. Nobody took any responsibility. As they say, when you got to go, you don't think about how I got into this mess or how my city's got into this mess. You don't think about "what is my responsibility here?"

Jeremy: When did the use of human excrement start being phased out?

Donald Worster: It continues even today in some small amount, but I think it really doesn't start until Mao's era. China was importing from Japan and United States, early chemical fertilizers from the 1940s on, but it isn't until Mao, in the last years of his regime or his death, that China built a big chemical fertilizer plant of its own. Then it continued to build and continue to build until today, China produces and uses more than half of all chemical fertilizers in the world.

Well, that's put pretty much an end to human excrement use. But the only use that I've seen of any significance is in Napa cabbage, a few

other vegetables, bok choi. They use it on those because they say it enhances the flavour. It's now a taste. Human excrement gives a flavor to some vegetables that people miss. They don't find it in ... You can get a good price for your vegetables that are fertilized with the human waste. That's a very small scale industry.

Jeremy: Basically, it's gone from being a pollutant to being a resource back to being a pollutant. Is this going to be another turn of the wheel as people maybe become aware of the consequences of using all that synthetic fertilizer?

Donald Worster: Well, I ... hope that we can find some way to deal with this, because China is today suffering, as every major agricultural producing country is, from terrible stream-water and ocean pollution because of chemical fertilizers. They would suffer from human excrement too. They did do that, but this is a new source of pollution. China has this problem, all of its major river ports. Those are polluted by chemical fertilizers. Streams, ponds, lakes have serious problems. All the major lakes, Tai lake, have this problem.

China is facing this, and is likely to do more, quickly, about it than many other countries are doing. But it seems to be at this point, it's inherent and I don't know you can cut back on the use of it. But it's so cheap to produce, the farmers refuse to cut back on it. They just ... more the better.

Jeremy: Yes, I find it very interesting this idea that thinkers have had for a long time, that somehow the fertility has to get back from human waste, food waste back to the farm, which is where it started off in the first place. That's why you need ... If you weren't taking anything off, you wouldn't need to put anything back on. The idea that this has to be done in a sustainable fashion seems to come and go, and as you say, synthetic fertilizer is so cheap to buy that it's worth wasting.

Are there any lessons you think to be learned from the Chinese history of using human excrement, or is it just something we're going to have to figure out?

But one of the really interesting things about it, that makes it hard to think about it being a problem is, if you've got an ozone hole, you stop people producing the chemicals that destroy the ozone. It's hard to stop people producing excrement.

Donald Worster: That's absolutely right.

I say, you have to understand that if we eat, we're going to excrete. This is why I end my book by saying I'm not a utopian after studying this problem. I don't think that there are easy solutions suggested on the left or the right politically, that we just have to get our heads right with Jesus, or become spiritual, or study Buddhism, or ... All these things are wonderful to do for some, but this is just basic human biology.

It's hard to be utopian about this one. When you consider that there is no ... This is what makes us animals. We are a part of the animal world. We can't change that. No cultural revolution, no Renaissance, no poetry or philosophy will change this fundamental biological condition that we are in. This is us and we're not going to ever be different.

I should add that there's a happy ending to his early years in the outhouse.

Donald Worster: When my grandparents put in an indoor toilet, I moved over there as fast as I could, stay over there every night I could, because I just love the feel of it and the cleanliness and all of that. I wanted to get away from it. Everybody does.

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