

## Caterpillar Dreams: A Multispecies Fabulation

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**Abstract:** Since the early 1990s, a Chinese medicinal fungus known as Winter Caterpillar Grass or *Cordyceps Sinensis* skyrocketed in popularity among the increasingly wealthy Chinese, and became one of the economic mainstays of the Himalayan communities, particularly Tibet. This brief essay examines the various narratives of this mysterious fungus, from its Himalayan origins to the meta-political and economic level, as well as its cultural uses in the East and West. This discussion of the cordyceps is written as a way of thinking about and through the discourse of the multispecies, and framed by Donna Haraway's conceptual idea of the *Chtulucene* and the notion of speculative fabulation, as well as Anna Tsing's concept of *friction*.

During one of my trips back to my mother's home as a stressed-out student, I experienced one of the most energizing moments of my life. My mother believes in the power of Chinese medicinal herbs and throughout my life, my sister and I have endured, without much questioning, soup after mysterious soup meant for our health, wellness and longevity. Oftentimes I would ignore the various ingredients in the bowl, recognizing at times, the taste of ginseng or birds nest, but that time I noticed peculiar worm-like shapes that were somewhat chewy but pleasantly edible. That evening, I probably experienced the best sleep of my life, and the next morning I remembered feeling positively invigorated and raring to go. My mother of course then began to educate me on what I had partaken of in the soup the night before. It was, literally translated from the Chinese, winter caterpillar grass – a medicinal fungus that promised energy, health and longevity. Caterpillar grass is also known as caterpillar fungus or in Tibetan, *yartsa gunbu*.<sup>1</sup> There is of course, the proper scientific appellation, *cordyceps sinensis*.<sup>2</sup> It is often referred to as a mushroom or a fungus but it is actually much more than that.

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<sup>1</sup> "The Emperor's Mighty Brother," *The Economist*, December 19<sup>th</sup>, 2015,  
<http://www.economist.com/news/christmas-specials/21683980-demand-aphrodisiac-has-brought-unprecedented-wealth-rural-tibet-and-trouble>

<sup>2</sup> See two articles. Ashok Kumar Panda and Kailash Chandra Swain, "Traditional Uses and Medicinal Potential of Cordyceps sinensis of Sikkim," *Journal of Ayurveda and Integrative Medicine* 2, no. 1 (2011): 9-13, doi: 10.4103/0975-9476.78183 and H. C. Lo, C. Hsieh C, F. Y. Lin, and T. H. Hsu, "A Systematic Review of the Mysterious Caterpillar Fungus *Ophiocordyceps sinensis* in Dong-ChongXiaCao (Dong Chong Xia Cao) and Related Bioactive Ingredients," *Journal of Traditional Complement Medicine* 3, no. 1 (2013): 16-32, doi: 10.4103/2225-4110.106538

In one of those astonishingly time-lapsed filmed nature segments from BBC's Planet Earth, a jungle bullet ant is struggling, and acting in an odd manner.<sup>3</sup> It keeps climbing upwards as if propelled by an unknown force. It is also shunned by the rest of the ant colony. Sir David Attenborough's calm expert tones do not help dispel the sinister changes the ant is undergoing, and soon over a period of time, it is dead with a stalk emerging out of its head bursting into spores that may very well infect other ants and pose a danger to the colony. The monstrous imaginary here is drawn from a metamorphosis that is the stuff of nightmares for it requires an alien body seeking a (suitable) living host. The Tibetan *yartsa gunbu*, the *cordyceps sinensis*, is not merely a mushroom but both caterpillar and fungus, where a living creature (ironically bound for a different transformation) is infected by another organism, is absorbed, petrified, and dies, and is transfigured as a vegetation to live again through airborne propagation. It is in some ways, a companion species – it digests, assimilates, and transforms.<sup>4</sup> From the stomach bursting scenes of *Alien* to the *Invasion of Body Snatchers*, the cordyceps is a remarkable symbiotic narrative of multi-species mutations where “multispecies players, who are enmeshed in partial and flawed translations across difference, redo ways of living and dying attuned to still possible finite flourishing, still possible recuperation.”<sup>5</sup> The story of the caterpillar fungus here is a tale of multispecies strategies that are braided into the circuits of capital and geo-politics, as well as health discourses entwining the east and west.

Across the Himalayan plateaus, particularly the Tibet Autonomous Region and its bordering neighbours, Nepal, Sikkim, Bhutan and India, the winter caterpillar larvae of various types of ghost moth are found in these high altitudes.<sup>6</sup> Instead, the airborne spores of the fungus cordyceps (in Latin, meaning club and head) seek out the larvae usually lying 6 inches below the ground. The fungus infects the living host, and consumes more than 90% of the insect, and mummifies it over the winter. When spring comes, and as the stroma matures, a thin brownish shoot protrudes from the head of the dead

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<sup>3</sup> BBC Worldwide. “Cordyceps: Attack of the Killer Fungi – Planet Earth Attenborough BBC Wildlife.” Online Video Clip. Youtube, November 3<sup>rd</sup>, 2008. <https://www.youtube.com/watch?v=XuKjBIBBAL8>.

<sup>4</sup> Donna J. Haraway, *Staying with the Trouble, Making Kin in the Chthulucene* (Durham and London: Duke University Press, 2016), 65. Also see Donna J. Haraway, “Commentary: Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin,” in *Environmental Humanities*, vol. 6 (2015): 159-165. I also find this very helpful: Donna Haraway, *The Companion Species Manifesto: Dogs, People, and Significant Otherness* (Chicago: Prickly Paradigm Press, 2003).

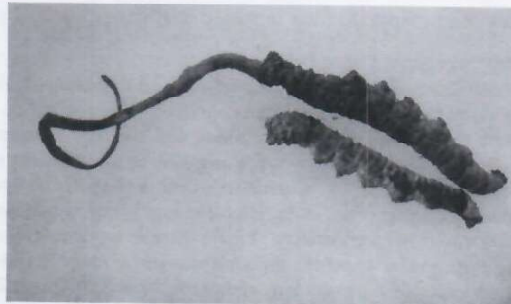
<sup>5</sup> Haraway, 2016, 10.

<sup>6</sup> Likely the most informative paper written on cordyceps, see Daniel Winkler, “Yartsa Gunbu (*Cordyceps sinensis*) and the Fungal Commodification of Tibet's Rural Economy,” *Economic Botany* 62 no.3(2008): 291-305.





caterpillar, growing 4 or 5 centimetres and pushes through the soil towards daylight. From April to August, the cordyceps gold rush begins as Himalayan communities trek upwards of 3800 metres above sea level to the grassy alpine meadows to harvest the caterpillar fungus. For Tibet which makes up nearly 95% of world's supply of cordyceps, the caterpillar fungus trade is estimated at \$1 billion for anywhere between 100 to 200 tons, with a family of harvesters earning at least \$150,000 a year for 2 months of painstaking work on the plateau. This is a mind boggling change to traditional standards of living in that part of the world since the early 1990s.<sup>8</sup>



<sup>7</sup> Map reproduced here with permission from Daniel Winkler, "Yartsa Gunbu (Cordyceps sinensis) and the Fungal Commodification of Tibet's Rural Economy," *Economic Botany* 62 no.3 (2008): 295.  
<sup>8</sup> Yeshe Dorje, "Political Motives Seen in Beijing's Warning on 'Himalayan Viagra'," *VOA*, June 1st, 2016, <http://www.voanews.com/a/china-tibet-cordyceps-himalayan-viagra-yartsa-gunbu-fungus-xinhua/3349826.html> Please note that dollar figures are quoted in US dollars.

The harvesting activity is strenuous and risky. In Yushu, where Tibetan rural settlements of around 400,000 inhabitants are scattered across the sparsely inhabited mountainous plateau, the economic life of the people has become dependent on the cordyceps harvest. Here school holidays are scheduled around the time of the cordyceps harvest because children are the most skilful pickers due to their nimble limbs, and their sharp eyesight. From April or May, the harvesters crawl on their hands and knees, trying to spot the spindly brown shoots among the grass, sometimes digging one up every few minutes. The ground after the long winter can be hard, and the cordyceps has to be dug up in one piece to be worth anything as they are dried and consumed whole. The harvesters usually camp out on the mountains, risking the occasional prowling wolf or bear devoting their time to the mad rush for the caterpillar fungus. While herding yaks brought hand to mouth subsistence at one time, it is the cordyceps economic windfall which has enabled some Yushu communities to continue traditional yak rearing.

In these veritable zones of awkward engagement, to deploy Anna Tsing's helpful concept, the Tibetans have never been so entangled with the Chinese government, and global capital.<sup>9</sup> In 1993, suspicion surrounded the Chinese long distance athletes who shattered world records at the World Athletic Championships held in Stuttgart, Germany.<sup>10</sup> The suspected use of performance enhancement drugs by the athletes led to a mysterious potion that included cordyceps. The popularity of the caterpillar fungus skyrocketed, particularly among ordinary Chinese whose rapidly growing personal wealth helped invigorate the cordyceps economy.<sup>11</sup> By 2013, the cordyceps harvest in the Tibetan Autonomous Region was worth \$1.2 billion (retail value of 50 tons of cordyceps), equivalent to nearly half the earnings generated by tourism. In 2014, the Chinese newspaper Xinhua reported that the region had an estimated

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<sup>9</sup> Anna Lowenhaupt Tsing, *Friction: An Ethnography of Global Connection* (Princeton, NJ: Princeton University Press, 2004). I find the concept of "friction" to be very useful for engaging with these messy global connections, and it works as a metaphor for diverse and conflicting engagements which Tsing calls 'zones of awkward engagement'. She sees 'friction' as "a reminder of the importance of interaction in defining movement, cultural form, and agency. Friction is not just about slowing things down. Friction is required to keep global power in motion. It shows us (as one advertising jingle put it) where the rubber meets the road.... Friction inflects historical trajectories, enabling, excluding, and particularizing." (Tsing, 2004, 6). Needless to say the writing here is also partly inspired by Anna Lowenhaupt Tsing's 2015 monograph, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (Princeton University Press).

<sup>10</sup> These were in the long distance races. Peta Bee, "Anti-Dopers can't hope to solve this Chinese puzzle," *The Guardian*, April 26<sup>th</sup>, 2004, <https://www.theguardian.com/sport/2004/apr/26/athletics.petabee>

<sup>11</sup> See for example reported market quotes for 2009. Wood Yi, "Cordyceps causes the price plunge", Qinghai Shanyuan, May 20<sup>th</sup>, 2009, <http://qhtcw.com/NEWS/enInfo.Asp?ID=322>



325,000 privately owned cars, with the highest concentration of ownership in cordyceps harvesting areas. Significantly, the Chinese obsession with the caterpillar fungus is enabling the rural inhabitants of the TAR to resist the Chinese government's ambition for Tibet by ensuring the financial security of the very same pastoral peoples whom China aims to resettle to the urban centers in order to manage the Tibetan population.

The Chinese annexation of Tibet in 1950 has continued to be a political tinderbox in the region. China adapted capitalist modernization practices as part of the Four Modernizations agenda launched in December 1978. In 1999, Chinese Ex-Premier, Jiang Zemin's "Great Western Development" project was initiated to reshape the Tibetan countryside – or according to Tibetan opposition, more of a social engineering project to dampen oppositional unrest among Tibetans who continued to see themselves as colonized by China.<sup>12</sup> Who could not want modern urban comforts of health, education, water, electricity, transportation and communication resources? Furthermore, the high-speed Qinghai-Tibet railway (2006) would integrate Tibetans into a rapidly developing China. It was also an ambitious mass relocation project that has, since 2006, moved two-thirds of rural Tibet's population to new built townships in order to raise the standard of living for those who lived in isolated countryside.<sup>13</sup> Tensions had run high particularly in the figure of self-immolating Buddhist monks as some felt the relocation was a form of cultural genocide and rural peoples were ripped from their way of life.<sup>14</sup> The cordyceps economy, however has generated enough wealth in these distant hill regions to improve and raise everyday living standards.<sup>15</sup> Other than the exile Dalai

<sup>12</sup> China/The People's Liberation Army *invaded* or depending on historical points of views, *liberated* Tibet in 1950 (see <http://tibetoffice.org/tibet-info/invasion-after>). Jiang Zemin announced the 'Great Western Development' plan in June 1999 to promote development in the Western regions. In 2006, the Beijing began expanding the high speed railways to connect Qinghai and Tibet. The high elevation rail connection offers some of the most spectacular views in the world.

<sup>13</sup> Andrew Jacobs, "Rights Report Faults Mass Relocation of Tibetans," New York Times, June 28<sup>th</sup>, 2013, <http://www.nytimes.com/2013/06/28/world/asia/rights-report-faults-mass-relocation-of-tibetans.html>

<sup>14</sup> Daniel Winkler is the most widely cited expert on cordyceps. See his extensive website <http://mushroaming.com/Cordyceps-articles>. In academia, much research on the cordyceps economy has been carried out in the sciences. Michelle O. Stewart is one of the very few social science scholars researching on the cordyceps political economy and the tensions between Tibet and China. See Michelle Olsgard Stewart, *The Rise and Governance of 'Himalayan Gold': Transformations in the Caterpillar Fungus Commons in Tibetan Yunnan, China* (University of Colorado, Boulder, Geography Graduate Theses & Dissertations, Paper 5, 2014).

<sup>15</sup> Geo Childs and Namgyal Choedup, "Indigenous Management Strategies and Socioeconomic Impacts of Yartsa Gunbu (*Ophiocordyceps sinensis*) Harvesting in Nubri and Tsum, Nepal," *Himalaya, the Journal of the Association for Nepal and Himalayan Studies*: 34, no. 1, (2014) Article 7: 8-22.

Lama, the humble caterpillar fungus has become the symbol of Tibet's independence from China.

The changing economic circumstances despite the roller-coaster cordyceps retail prices in TAR have not escaped Beijing's notice but for some Free Tibet activists, the Chinese government's recent attempt to discredit the medicinal uses of cordyceps is politically motivated. The Chinese Food and Drug Administration (CFDA) declared in February 2016 that the caterpillar fungus from Tibet was a danger to health as it contained up to 10 times the national limit of arsenic, and consuming the fungus over time would lead to physical harm.<sup>16</sup> However, a more detailed research carried out by Professor Karl Tsim of Hong Kong University of Science and Technology found that the claims were over-exaggerated and that given the soil samples, these were naturally occurring arsenic levels which would require that one would have to consume an unreasonable large quantity to reach that level of harm and toxicity claimed by the CFDA.<sup>17</sup> Economic and financial stability in the TAR would likely increase social aspiration, and political awareness for self-determination among those in the mountainous regions, a threat to Beijing's assimilation plans. Lhukar Jam, who ran for Head of Tibet's exiled government, maintains that: "The colonizers don't want their subjects to become politically, economically and culturally ... equal to them.... the Chinese government fundamentally feels threatened when they see people on the Tibetan Plateau gain power through the economy. They don't want to have genuine economic development in Tibet."<sup>18</sup>

Yet there have been worrying and noticeable changes to the bucolic way of life in these Himalayan settlements, no matter the economic benefits. Coincidentally, the public health warning from CFDA had coincided with a crackdown on corruption. Due to their medicinal promises, especially as an elixir of life and an aphrodisiac (the cordyceps is also known as the Himalayan Viagra), the cordyceps has become a highly valuable and desired gift in guanxi (reciprocal gift-giving) practices in Chinese politics, thus increasing bribery and corruption among officials. There has been increasing violence, and fights have become more prevalent in these hill communities with gang warfare

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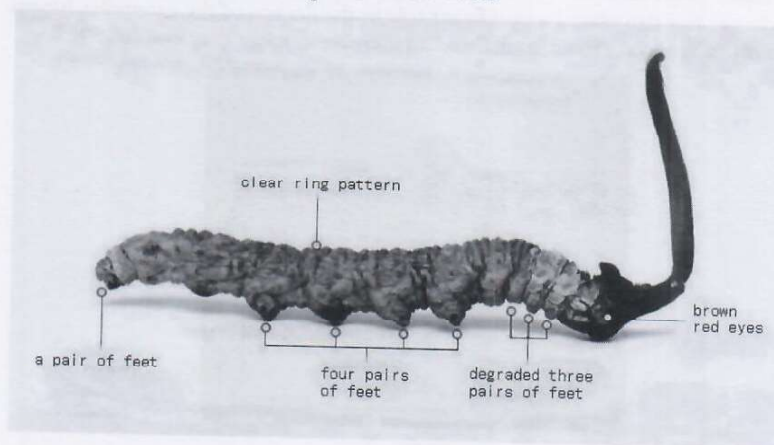
<sup>16</sup> Ting Yan, "Highly prized 'caterpillar fungus' declared a danger to health by China's food and drug administration," *South China Morning Post*, February 5<sup>th</sup>, 2016, <http://www.scmp.com/news/china/society/article/1909837/highly-prized-caterpillar-fungus-declared-danger-health-chinas>

<sup>17</sup> Yeshe Dorje, "Political Motives Seen in Beijing's Warning on 'Himalayan Viagra,'" *VOA*, June 1<sup>st</sup>, 2016, <http://www.voanews.com/a/china-tibet-cordyceps-himalayan-viagra-yartsa-gunbu-fungus-xinhua/3349826.html>

<sup>18</sup> *ibid*



having broken out over harvest, circulation and price of supplies.<sup>19</sup> Even the Dalai Lama has pleaded for peace in the region, asking for a return to traditional values.<sup>20</sup> In 2011, a Nepalese court heard a gruesome case that happened in 2009 when the Nar Villagers from the northern district of Manang formed a posse to kill seven outsiders from a low lying district who had attempted to harvest the caterpillar fungus.<sup>21</sup> Outsiders and foreign workers have also been blamed for destroying the environments of the Himalayan meadows during the harvest period. Traditional gatherers would normally use a small pick to extract the caterpillar fungus, and replace the turf of grass after extracting with their hands. However, local villagers have noticed that hired workers and a few more enterprising pickers with larger digging tools were more careless, destroying the natural vegetation and disrupting the compaction of the soil. The lure of wealth and desperation have also resulted in the picking of the caterpillar fungus before it is fully matured, thus preventing the spores infecting the grubs of the ghost moths in the meadows. In Bhutan, as recently as December 2016, where the harvesting of cordyceps has become one of its most lucrative economies since 2004, the government is worried enough about the steep plunge in yield to initiate educational programmes around harvesting and conservation.<sup>22</sup>



<sup>19</sup> "China's prized caterpillar fungus worth its weight in gold," *South China Morning Post*, October 14<sup>th</sup>, 2013, <http://www.scmp.com/news/china/article/1331391/chinas-prized-caterpillar-fungus-worth-its-weight-gold>

<sup>20</sup> Childs and Choedup, 9.

<sup>21</sup> "Himalayan Viagra: Six men get life for Nepal murders" *BBC News*, November 15<sup>th</sup>, 2011, <http://www.bbc.co.uk/news/mobile/world-asia-15741813>

<sup>22</sup> Tshetrim Namgay, "Highland Economies in Crisis as Cordyceps Yield Plunge," *The Bhutanese*, December 11<sup>th</sup>, 2016, <http://thebhutanese.bt/highland-economies-in-crisis-as-cordyceps-yields-plunge/>

My mother is insistent on the authentic provenance and superiority of the Tibetan wild cordyceps she purchases for thousands of dollars. There are even helpful charts educating consumers on ‘real’ cordyceps, identifying 7 distinct pairs of feet on the caterpillar, with three degraded ones near the head with brown reddish eyes. As well, there should be a clear ring pattern on the caterpillar. There are also cheap fakes, some so brazen that they are made from plastic or paper pulp. The high value given to the caterpillar fungus is also based on the fact that no commercially affordable cordyceps of quality has been produced through artificial means. Cultivated cordyceps are often produced as mycelial powders instead to be mixed with other supplements. In 2012, the Chinese Authority of Convention on International Trade in Endangered Species (CITES) had declared wild cordyceps an endangered species, thanks to overharvesting, increased demand and environmental concerns.<sup>23</sup> However, scientists and conservationists complained that the CITES declaration was confusing in its terminology which did nothing to address the complex host-fungus relation, and therefore excluded the ‘fungus’ from the protection order.<sup>24</sup> By 2013, though not significant enough an impact, there were reports of rapid decline of the harvest all over the plateau while prices doubled.<sup>25</sup> For conservation scientists of the region, climate change has also played a significant role in the decline of the caterpillar fungus with “less snow, erratic rainfall and an increase in mean temperatures.”<sup>26</sup>



<sup>23</sup> Zeng Y, Han Z, Qiu P, Zhou Z, Tang Y, Zhao Y, et al., (2014) “Salinity-Induced Anti-Angiogenesis Activities and Structural Changes of the Polysaccharides from Cultured *Cordyceps Militaris*,” PLoS ONE 9, no. 9 (2014): e103880. doi:10.1371/journal.pone.0103880

<sup>24</sup> The CFDA had launched a 5 year cordyceps program in 2012 which enabled large pharmaceutical companies to use the caterpillar fungus for the health food industry.

<sup>25</sup> Elizabeth Snouffer, “Parasitic caterpillar fungus in decline,” *South China Morning Post*, March 25<sup>th</sup>, 2013, <http://www.scmp.com/lifestyle/health/article/1197235/parasitic-caterpillar-fungus-decline>

<sup>26</sup> *ibid*



There is a compulsion here to play with the metaphor of the caterpillar fungus in this complex assemblage of insects, caterpillars, fungus, people, mountains, and global capital. As Donna Haraway reminds us of how we stay with the trouble, none of what has happened in the Himalayan plateaus could have happened without this inconvenient entanglement of companion species, for good or for ill. The narrative of superhuman mutation, an inflection of contemporary health discourses, is plugged into the cordyceps. We are far from ancient Eastern medical texts and traditional Himalayan folk healers who have long used the caterpillar grass for a host of illnesses.<sup>27</sup> The cordyceps' monstrous transformational process leads to phoenix-like powers, though not for the host. Once an object of suspicion and the realm of traditional eastern medicine, the cordyceps, despite scientific skepticism, has now found respectability in many health food outlets in the same way other superfood trends operate in the West. Smart branding and packaging as a 'mushroom elixir' in a friendly powder form with mixtures of ginseng and coffee, distributed in numerous imaginative ways has given the cordyceps a new identity as more than just another dietary supplement to the latest sports and fitness craze. It promises everything, from sexual vitality, energy boosts and anti-ageing to strengthening the immune-system and cancer cures. Like its origins, the cordyceps embraces metamorphosis on a global level, a speculative fabulation plugged into tentacular political economies where Himalayan communities are dependent on a body-snatching spore to survive; where local and geo-political tensions emerge over the harvesting of these dried-up grubby creatures that promise so much healing and aphrodisiac prowess. In our engagement with multispecies worlding,<sup>28</sup> it is not merely that we are all compost but we are likely also all parasites.

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<sup>27</sup> Panda and Swain, 9-13.

<sup>28</sup> Though worlding is a Heideggerian concept, I draw the definition of worlding from Katie Stewart and her course outline on the same subject matter. She writes "Worlding is a term showing up in philosophy, literary criticism, digital studies, cultural geography, cultural studies and anthropology. It is a way of approaching wholes, systems, networks or culture in ways that account for emergence, the assemblage of disparate entities, and the experience or situation of being "in" something. Worlding literatures approach globalization but also basic questions of form and event, new materialism, objects, and the body. Much of the work on worlding begins by opening the ontologies of subjects and objects by positing theories of worlding or being in the world." See <https://liberalarts.utexas.edu/files/m6GpmqcUrg> (accessed February 24th, 2017).

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