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# MY ANT IS COMING TO DINNER

## Culture, Disgust, and Dietary Challenges

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The defining moment of every “bug banquet” comes right after our video and fact-based demonstrations are over. The tension is mounting in the room even before we uncover the plates and raise a roasted cricket. Then someone erupts with, “Oh wow, she’s really going to eat it!” This happens almost every time we offer an invitation to join us in eating insects. Most North Americans, without hesitation, consider it disgusting. But remarkably, hundreds of people have overcome these feelings and joined in the six-legged feast. Over the past thirty years a diverse group of scholars and entrepreneurs has been trying to start a dietary revolution in North America. Entomophagy—the technical term for insect eating—is emerging from the obscurity of university entomology departments and fraternity initiations into the public eye.

Most of us would rather not think about insects at all, much less consider swallowing one. How is it that North Americans, unlike most other cultures around the world, have come to almost universally reject insects as human food? This question provides a wonderful opportunity to explore how our food choices are related to our cultural identity, how disgust mediates this response, and what happens when those choices are challenged. In this paper, we examine why some scholars are persistently promoting entomophagy for North Americans, how the cultural meanings and psychological aspects of food choice create barriers to such a radical dietary change, and how we might begin to surmount those barriers.

The public knowledge of edible insects has been confined largely to chocolate covered ants, canned crickets, and grubs at the bottom of tequila bottles. These gag industry products have been available for years and were recently updated to include items like the “I Ate a Bug Club” buttons and “Cricket Lick-It” pops (Menzel & D’Aluisio 1998). This interest in food

insects has recently been turning into a minor growth industry beginning with the publication of the *Food Insects Newsletter* in 1988. The popular press has also taken note of these phenomena. When The New York Entomological Society held its centennial banquet at the prestigious Explorers Club in Manhattan, it set out a bug-based menu (Boyle 1992; DeFoliart 1992). The event drew reporters from CNN, CBS, the BBC, and the print media. Among other talk show hosts, Jay Leno (*Tonight Show*) interviewed nutritionists who featured tasty insect recipes. And the interest has not slacked off. Glossy photo essays, magazine articles, and insect cookbooks with names like *Man Eating Bugs*, *The Eat-a-Bug Cookbook*, and *Creepy Crawly Cuisine* are now appearing on bookstore shelves. Pop-culture radio programs like *The Paul Harvey News* or *As It Happens* and television shows like *The New You Asked for It* and *Extreme Cuisine* on the Cooking Channel, together with numerous features on local stations, have all recently showcased the topic. This is an unprecedented interest by the public.

A primary source of this emerging interest in food insects is the educational effort made by museums, nature centers, and university entomologists. Insect zoos and bug rooms, with elaborate live-action and animatronic displays, have sprung up in almost every major city in North America. To stimulate public interest, the programming has naturally turned to annual bug banquets and insect dinners. The Insectarium in Montreal, for example, is a museum devoted entirely to bugs. For nine days each winter it opens the highly popular *Croque-Insects*, where patrons are willing to pay a \$6.50 fee to view and dine on insect delights prepared by Chef Jean-Louis Themis (Dunkel 1996). And The Pennsylvania State University hosts an annual Great Insect Fair, which includes an Insect Deli. There is no comprehensive account of the numerous

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bug festivals featuring insect tasting, but a partial listing can be found in the *Food Insects Newsletter* or in Gordon's *Eat a Bug Cookbook* (1998).

Strikingly, all of this activity has yet to attract much scholarly attention beyond the entomologists (Berenbaum 1995; DeFoliart 1999). The only comprehensive surveys of entomophagy have been by entomologists such as Bodenheimer (1951) and DeFoliart (1992). Historians, psychologists, and anthropologists have all shown considerable interest in dietary practices, but they seldom report insect fare. The food histories by Brothwell and Brothwell (1969) and Tannahill (1988) make only brief references to insects. Even historical accounts devoted to meat eating have ignored the role of insects in the human diet (e.g. Fiddes 1991; Simoons 1961; Toussaint-Samat 1992). One exception is Harris (1985, 154–174), an anthropologist, who nevertheless relies upon the entomologists for his chapter on “small things.” Beardsworth and Keil (1997) argue that sociologists have largely neglected the whole area of food and eating as a focus of interest. There is an opportunity here for under-taking a new multi-disciplinary investigation into the source of attitudes toward insects as food.

#### **Economic Benefits of Entomophagy**

North Americans think of insects, at best, as culinary curiosities (Huyghe 1992). But while the scholars who study food have largely overlooked entomophagy, insects and their relatives are a significant dietary and commercial factor worldwide (DeFoliart 1989). In the Middle East and Africa, locusts, termites, and certain grubs are prized. The fat, juicy caterpillars of the emperor moth are harvested from mopane trees in South Africa in the early summer months (October to mid-December). Elsewhere, barrels of grasshoppers and live marine worms provide customers with dinner in Chinese markets while in Thailand the giant water bug is a local favorite. Athletes and visitors at the 1998 Olympics in Nagano, Japan, cautiously snacked on crickets and beer, a traditional treat in the local bars. As Team USA hockey forward Brett Hull said, “You gotta stick them in sideways because if you put ’em in long way, the legs get stuck in your teeth” (Duhatschek 1998, D3). In Mexico, Central, and South America over two hundred insect species are consumed. And even in North America various native peoples have traditionally eaten grasshoppers, flies, and other insect species. (See DeFoliart 1999 for complete references and more.)

Food insects represent a significant global asset. Although under-utilized in North America, they are well-developed in other countries. For example, in Zaire insects make up 10 percent of annual sales of protein, which translates into 48,000 metric tonnes (DeFoliart 1995). The South African government has sponsored economic research on the annual harvest of the emperor moth, locally called the mopane worm (Bartlett 1996). Insect food can also be used as an animal feed supplement (e.g., for chickens and fishpond culture) (DeFoliart 1989; 1995). The protein in honeybee larvae that is cur-

rently wasted by the apiculture industry might be saved for human consumption (Hocking & Matsumura 1960). The value lost each year is estimated to equal that of the total honey crop. And finally, insect food production encourages small-scale agribusiness, which aids in development and self-employment efforts (DeFoliart 1989; 1995). The potential for new international trade and local markets has been judged to be very high.

#### **Global Food Supplies and Cultural Hegemony**

But economics is only one of the reasons given by entomologists and naturalists urging us to change our diet. Since at least the 19th century, when Holt published the pertly titled “Why Not Eat Insects?” ([1885] 1967), naturalists have argued that we are missing the benefits while collecting the negative consequences of our aversion to putting insects on the menu.

In many parts of the world, malnutrition is rampant. In some cases this can be attributed in part to a refusal to consume locally available, traditional foods because they are viewed by the dominant Western culture as “primitive” or “barbaric.” As a culture becomes increasingly Westernized so does its diet; this means dropping insects and other local species from the menu and developing a preference for beef, pork, chicken, and other “Western” foods (Darling 1960; DeFoliart 1999; Kyle 1987; Pirie 1967). Unfortunately, obtaining or raising such livestock is difficult in some regions of the world and also has environmental consequences.

#### **Environmental Concerns**

A growing concern among environmentalists is the consequences attending our food production system (Beardsworth & Keil 1997, 5). While limited applications of pesticides are essential to prevent crop destruction, farmers must make more frequent applications to meet the high cosmetic standards demanded by North American consumers. Our insistence on the absence of any visible insect parts or markings in our food results in unnecessary pesticide use (Pimentel, Kirby, & Shroff 1993). This not only affects human health but also the health of many other species as pesticide residues collect in soil and water. Furthermore, the production of beef, chicken, and pork livestock can have a significant negative impact on the environment. Globally, beef production results in burning of forests, erosion, and destruction of fragile ecosystems, which maintain other edible species as well as human habitats and traditional ways of life (Parsons 1988). Pork production has, in some regions of the United States, been linked with damage to regional soil and water and to human health (Nowlin and Boyd 1997). Raising insects for food by developing mini-livestock industries is projected to have a much lower impact on soil and water than the current vertebrate-based industries (DeFoliart 1995).

#### **Dietary Diversity**

Humans are omnivores, eating a variety of foods to achieve a nutritionally balanced diet. Our sensory and digestive physiology is geared toward this variety. However in developing cultures, there is a steady decrease in the types of food consumed (Pyke 1968). This

trend has been accelerated by the globalization of the modern market place, which has made it more difficult for some people to obtain a nutritionally complete diet. The over-consumption of a limited set of foods has already led to measurable increases of cardiovascular disease and, possibly, food allergies (Ritter 1990). Relying heavily on a limited set of foods exposes all of us to increasing risk of catastrophic food shortages, such as the Irish potato famine when a virus wiped out the entire potato crop. Considering insects to be food is one way to introduce more diversity into our diets. Yet, even if we become convinced that our attitude toward insects as food *ought* to change, it is far easier said than done.

### Dietary Challenges

Dietary change, as proponents of entomophagy have discovered, is not a trivial process. Mechanisms have been suggested, but the question remains, "How does a society learn to consume food differently?" Mintz argues that food habits have a cultural dimension that involves social and political goals and the exercise of power. Yet, "We do not understand these processes at all well, even though they are of immense importance to the world's future" (1996, 17–18). Mintz, Rozin, and colleagues further claim that food habits express and maintain ideational factors, such as cultural and moral values, through emotion—especially disgust (Rozin et al. 1997). "For each individual, eat-ing is a basis for linking the world of things to the world of ideas through one's acts—and thus also a basis for relating oneself to the rest of the world" (Mintz 1997, 173). Attempts to change our eating habits may disrupt power structures, violate socio-cultural identity or morality, and require significant shifts in all of these. There is evidence that our attitude toward consuming insects fits within this framework.

Within any culture, people eat only a subset of the edible substances available to them. This is not due to ignorance (although over time individuals may lose knowledge of the full range of foods). Rather, food choices both express and transmit aspects of cultural identity. "We" eat these foods, and "they" eat different foods. Humans function universally as if "we are what we eat" (Nemeroff & Rozin 1989). One way we maintain our identity and our separateness from other peoples is by not eating what they eat. The English derogated the French as "frogs," for example, because the French ate frogs while the English did not. In Cameroon, the Yassa and the Mvae "hold strong xenophobic stereotypes towards each other's food" (de Garine 1997, 192). Even though they have access to the same nutritive resources, each society ridicules the food habits of the other. Thus, our culture-wide aversion to insects as food is not due to concerns about their nutrition, safety, or taste (although we may raise such concerns as a rationale after the fact). Instead, it is probable that by excluding them from our diet we are demonstrating an unconscious but powerful cultural identity. To us, eating insects is "perverse, barbaric, or desperate" (Forsyth 1994, 63).

It is, in short, *disgusting*.

### Anatomy of Insect Disgust

Disgust is a universal human emotion that plays a powerful role in regulating our behavior. It is an emotional mediator that, through a visceral aversion, even nausea, ensures that we avoid crossing the boundaries that define our species, our culture, and, therefore, ourselves (Rozin & Fallon 1987). It is one thing to give intellectual assent to scholarly arguments for dining on insects; it is another matter to overcome the negative visceral reactions to the sight of a deep-fried tarantula on our plate or a leggy marine worm in our soup.

While "core disgust" is initially an *innate* response to bitter tastes (Rozin & Fallon 1987; Steiner 1979), disgust plays a more general role in human behavior through socialization. We *learn* to be disgusted by a wide range of foods and food combinations (e.g., ketchup with ice cream), to other objects (e.g., saliva, dead bodies, feces), and to behaviors (e.g., spitting, incest, bestiality). Young children do not have the same food boundaries as adults. They react with disgust to bad tastes but not to culturally forbidden substances. Preschoolers happily put dead flies, earthworms, and old gum into their mouths. However, by age seven or eight they have adopted the food preferences of their culture and avoid substances labeled "not food" (Fallon et al. 1984). Many of these avoided substances now are disgusting, including in Western culture, insects and similar species (Berenbaum 1995; Kellert 1993). By what means is this insect disgust learned?

The most likely mechanism is modeling. In Western culture, insects are not widely available in grocery stores and do not appear on restaurant menus or family dinner tables. Thus Western children have little opportunity to see and eat insects. They *do*, however, often see adults vividly expressing disgust and fear toward many insects. Research on the development of food preferences has demonstrated the importance of such exposure and modeling. Eating new foods with respected others in social settings is key to creating a preference (Raudenbush et al. 1995; Rozin 1990).

Another mechanism is learning through association. Food likes can be influenced by pairing a novel food with familiar and pleasant tastes such as associating tea or coffee with cream and sugar or a dessert (Booth 1982). Food dislikes develop when foods are associated with unpleasant tastes or experiences, such as bitterness or nausea (Rozin & Zellner 1985). Once we find insects disgusting, tasting them is likely to induce nausea, further entrenching our rejection. Disgusting substances also have the power to "contaminate" anything that they literally or symbolically touch (Rozin & Nemeroff 1990). The vivid associations of some insects with the disgusting objects on which they feed (sewage, manure, or rotting bodies) may render all insects disgusting. The fact that most edible insects eat fresh vegetables, leaves, and fruit pales in comparison with our powerful associations between insects and decay.

Finally, operant conditioning processes may contribute to insect disgust when children are scolded and even punished for touching or eating insects.

While such mechanisms encourage the development of insect disgust, more subtle and powerful socialization processes are also at work. If “we are what we eat” (Nemeroff & Rozin 1989) and our cultural identity is unconsciously tied to our food choices, then we need to ask whether insects represent undesirable characteristics that we avoid by refusing to be “contaminated” through consumption. There is some evidence for this.

### The Horror of It All

Stories, movies, and myths in Western culture often represent evil, the enemy, or the alien in insect form (Mertins 1986; Hardy 1988). Villainous characters are so evil or base that they eat insects or worms. In literature, insects are sometimes used as similes or metaphors for undesirable traits (e.g., Dostoevsky’s *The Devils*, *Crime and Punishment*, *The Brothers Karamazov*, and Kafka’s *Metamorphosis*; see LeBlanc 1997, 130–131). Further, many cultures, considered “primitive,” “savage,” or “uncivilized” by Europeans (and later, North Americans), use insects as a major source of food. Consuming insects would then be saying that we are like these peoples whom historically we have considered “inferior.” We may no longer believe, consciously or unconsciously, that other cultures are inferior. Yet even if we agree that other cultures are “equal but different,” the fact is that they *are* different, and thus, perhaps, we act in ways that maintain the difference. This is further supported by the experience of individuals who have moved from a Western culture into one that eats insects. At first they experienced disgust, but this feeling dissipated as they increasingly understood and *identified* with that culture to the point that they could eat insects with equanimity (P. Mahaffy & H. Spaling, personal communication, 16 June 1997).

If the Western disgust at ingesting insects is indeed tied to subtle, unconscious, ideational factors, then suggesting a change of diet will likely be met with derision, disbelief, or, at least, unease. And in fact, many of those who have publicly presented the idea of eating insects, including ourselves, have encountered precisely these responses. Yet at the same time they express disgust at the thought of eating insects, many people show a cautious interest, sometimes more accurately described as “horrified fascination.” This is not surprising, particularly with regard to potential foods. As omnivores, humans consume a varied diet. While caution about trying new foods protects us from potential toxins, curiosity about new foods ensures that we will try something different because it might provide needed nutrition (Rozin et al. 1997). By recruiting this cautious interest, it may be possible to alter people’s attitudes toward consuming insects.

Whether intentional or not, this curiosity may be what the recent surge in insect-eating events, books, articles, and programs in the popular media is tapping

into. As the pressure increases to produce what some call “edutainment” (programs that are educational and entertaining), we have discovered that insects provide both an attraction and a challenge that create the conditions in which learning might occur. Disgust, however, is a powerful motivator. Reading about how “others” eat insects and hearing rational arguments for their inclusion in our diet—no matter how entertaining—may not be sufficient to undermine the deep and subtle roots of this response. Perhaps the means by which our attitude toward insects as food will effectively be altered will go beyond logic and information to our dining on insects with others. Perhaps our aversion to insects will gradually fade as we learn to respect people from other cultures and show that respect by eating their cuisine. We have begun testing the pliability of these attitudes in a series of controlled bug banquets (Looy & Wood in progress).

### Changing Our Minds

If Mintz is correct that food habits involve structural conditions and power relationships within a culture, then we must examine the extent to which we, as individuals, are free to choose to eat differently. Strategies for change that focus on the individual, psychological dimensions will only work if social conditions permit such shifts. Possible constraints include availability, cost, government regulations, status of the food, need (or perceived need), symbolism, and social conditions such as war, famine, rationing, and plenty (Mintz 1996). Any exploration of the source, maintenance, and transmission of the North American aversion to insects as food will need to go beyond psychology to include historical and sociocultural dimensions.

In summary, insects (and more broadly, spiders, worms, and grubs) are an unremarkable element in human diets with one exception: in Western culture insects are more commonly objects of fear and disgust than candidates for the supper table. Yet, for a variety of reasons, voices within this culture have persistently and with increasing visibility challenged us to reconsider. Such reconsideration requires us to reflect on the roots of our aversion, which is manifested in and maintained by the disgust we experience when we contemplate a six-legged feast. This process may illuminate our understanding of ourselves, of our relation to other cultures, and of the pivotal role that food plays in expressing, maintaining, and transmitting cultural values. These are vital questions for our increasingly globalized society, and we invite scholars from biology, entomology, history, anthropology, sociology, nutrition, and psychology to contribute to our understanding of our relation to insects as food. *Bon appetit!*

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