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IJoC Media, Hot and Cold

Burning Man:
Heating, Eating and Doing the Calorie

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We're gonna fire up your metabolisms with some warm-up squats! Let's burn off that extra helping of ice cream![1]

Exercise. Metabolism. Heating. Eating. Making the body a fire pit for burning food through exercise seems normalized in myriad gyms and exercise programs. Dressed in lycra in a windowless gym, nobody questions that they are actually burning off their dessert by jumping and sweating alongside a cadre of other delinquent eaters. The relationship between ridding the body of ice cream through the squeezing of one's gluteal muscles which in turn revs up one's metabolic rate seems somehow natural. Food goes in and, in order to prevent it from being stored as fat, we are expected to get rid of it by doing things: running, jumping, working, playing, sitting, sleeping, and just being. Before the thousands of mobile device apps for tracking eating and doing there were, and still are, pedometers, food diaries, and weight loss and exercise tracking clubs and groups to monitor how much food we burn, and how fast we burn it. There are myriad metaphors for this exchange. We "earn" a slice of pizza after a long swim, and we "treat" ourselves to a handful of candy after mountain biking—but that which we are managing, monitoring and controlling in the body, and through food, is heat.

The communication between food and the body happens through an equilibrium equation where bodies negotiate units of heat through food and exercise. This equation is now part of our sociocultural infrastructure. Food labeling policies, exercise tax credits, insurance policy standards and international health indices all turn our attention to an idealized and reductive relationship of heat exchange between food and the body. Objectively, the body is the apparatus that experiences thermodynamic heat exchange. The commonplace unit for the exchange is the calorie.

[1] The question becomes, then, how to categorize food and the body? If, as McLuhan writes: "a hot medium is one that extends one single sense 'in high definition,'" (1964, p. 36) is food such a medium in communication with the body? In the current reductive model of communication through calories, yes. The body is scarcely participatory, receiving food to be metabolized. A more comprehensive model of food in policy, and public discourse could make food "cool." To think of food in the context of personal history, culture or place, it becomes more than just units of heat. In these cases food becomes a "low dimension" moment of gustation, where a bite of ice cream becomes a memory of summers at the cottage, a trip to the county fair, or, simply, Florence, Italy. The eater decides what a food will become, in a scientific model of eating, food already *is*.

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Codified in policies around the world, the trope of the calorie looms large on boxes of cereal, printed on restaurant menus, and measured by treadmills, elliptical machines, and wearable monitors. Sometimes we celebrate the calorie's absence. Food packaging trumpets the lack of calories: "Low-calorie brownies!" "No-calorie sodas!" We learn that eating calories is bad. Exercises and workouts celebrate the abundance of calories—"1,000-calorie workout!" "Burn major calories in less time!" "How to burn more calories when you sleep!" We know that expending calories is good. The calorie mediates communication between our food, our bodies and our activities and it turns into heat everything we eat and everything we do. Literally and figuratively, the calorie is hot.

Metabolic Determinism

Measuring the heat of the body is centuries old. In the 18th century French chemists Antoine Lavoisier and Pierre-Simon Laplace measured a guinea pig's exuded heat when trapped in an ice-insulated pot. Their *machine,* (which only later became *le calorimetre*) helped them establish the fact that heat phenomena could be both instrumentalised and measured in a living body. There is no mention in their 1783 treatise on heat, *Memoires sur la chaleur,* if they ate the guinea pig (Lavoisier & Laplace, 1780).

A century or so later, German chemist and physiologist Max Rubner used the word 'calorie' to denote the amount of heat required to raise one gram of water, one degree centigrade (Widdowson, 1955). Using respiration calorimeters to measure the caloric output of animals, and bomb calorimeters to measure the calories contained in foods, Rubner and others applied a law of isodynamism to the human body: to maintain a steady weight, calories *in* should equal calories *out*. These early ideas of heat were integral to arriving at a physico-mechanical relationship between eating and heating the body (Rubner, 1902).

Nineteenth-century nutrition scientists like Rubner and Max Pettenkoffer in Germany and Wilbur Atwater, Edward Rosa and Francis Benedict in the United States, who were inspired by the operations of mechanical technologies like steam engines, offer an explanation for the cultural transformation of the calorie from a unit of measuring heat to a unit of analyzing food, people and activities. For them, the parallels between machines or systems and humans were striking. In 1928, Dr. Benedict writes in *The Scientific Monthly*:

> One of the first things learned in the study of vital activity was that heat is not produced solely to keep the body warm…As the boiler, in order to produce power, must give off a large amount of heat, so is human heat production likewise necessary in order to furnish motive power for human activities. (1928, p. 9)

We call human combustion "metabolism," yet in both boilers and our bodies, we want a high rate of thermogenesis; we shovel potato chips into our mouths instead of coal into a firebox; we do Zumba instead of raising and lowering a piston to turn a flywheel.

Indeed the calorie affords us a new perspective on the body: we get to see, be and do, heat. Calorified foods, metabolisms and activities allow us to be the mediating technology in which potential

energy is turned into kinetic and in which food or fat is turned into fire. Bodies turn pizza into pushups, butter into burpees, and muffins into marathons. This means, however, that this equation of calories can be used as a quantitative judgment of our body's efficiency, and eating and exercise become our embodied measure of that efficiency. The efficient body runs hot, and burns calories through quotidian activities: shoveling snow, having sex, and vacuuming; or through nominated exercise: running at a speed of 5.2 miles per hour, using an elliptical machine, or doing a boot camp aerobics class (Harvard Heart Letter, 2004). Statements like: "I run because I love to eat" become obvious when there is a relationship between food and doing, and that relationship is one in which the body is a site of caloric negotiation.

Every time we "play with our children with moderate effort" for 30 minutes in order to "burn off" our snack of 21 almonds, we dutifully obey the first law of thermodynamics (Harvard Heart Letter, 2004). These models and technologies, and the designation of the calorie as the structuring trope for eating and doing, allow us to parse heat and temperature; they also encourage particular ideas about food, eating, and human metabolism. To say someone is "hot!" is both a judgment about their physical attributes—the size of their breasts, the ripple of their abs, or the symmetry of their face— and an assessment of their metabolism. As we idealize low waist-hip ratios, body mass indices, and body fat percentages, we reinforce the physiological roots of what it means to be "hot." As such, the word calorie becomes a structuring unit in the communication about food and bodies. To understand categories of food and bodies in such a way (e.g., scientific and technological), we need to be calorically literate: we need to be able to parse a menu in New York City, to consume food responsibly according to our activity levels, and to understand our bodies through a metabolic determinism that circumscribes how "hot" we can be. The calorie becomes a structuring concept of the management and moralization of our body. When it comes to embodied calories, it's cool to be hot.

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