Tandoori Tales

A brief account of Indian oven-making

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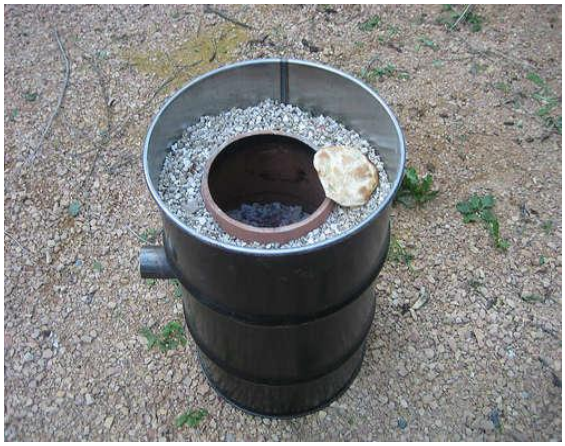
4 August 2011

When faced with the prospect of a "creative" project for GSTR 410, the three of us – Emily Morgan, Anna Stukenberg, and Andrew Tolliver – made up our minds to research the immigration of food from the Punjab region of India to other parts of the world. At the time of our idea, we knew that we wanted to research the travel and transformation of select North Indian dishes, narrowed down later to include Tandoori Chicken, Saag Paneer, Mango Lassi, Garlic Naan, and Chana Masala. Further, we knew we wanted to replicate these dishes for our final presentation. And then another idea struck: we would construct our own Tandoor (Indian oven) and use it to prepare some of our dishes. Andrew, the prospective Engineer and current Metals and Power Technology Lab employee was the one to suggest the idea and would be the one to spearhead its successful completion. Emily and Anna readily jumped on board with the idea, agreeing to undertake the copious amounts of research and reading necessary to complete such a project. Thus, with visions of succulent Tandoori Chicken and mouth-watering Garlic Naan wafting in our heads, we began the research process.



Before construction of the Tandoor could begin, we knew that we needed to thoroughly understand what it was, where it came from, and how it functioned. Our research showed us that a Tandoor was a type of cylindrical Indian oven made of clay and other, varying materials, based in a bed of charcoal, and often built into the ground. Tandoori cooking, we found, is generally believed to have originated in Northern India – specifically in the Punjab region. The basis for this belief lies in Tandoor remains dating back to 2600 B.C. which were discovered by archaeologists in Northern India. *New York Times* writer, Steven Raichlen, discusses the Tandoor's origins and prevalence in the modern world in his article, "A Tandoor Oven Brings India's Heat to the Backyard." While Raichlen is quick to point out that "the center of tandoori cooking is Punjab," he acknowledges that Tandoors are a prolific fixture in cuisine for countries including, but not limited to Georgia, Pakistan, Azerbaijan, the Balkans, Turkey, Iran, Armenia, and Uzbekistan as well as the Middle East as a whole, Central Asia, Burma, and Bangladesh.[1] Raichlen calls the Tandoor "the preferred barbecue pit throughout Central and South Asia and the Caucasus region," citing the many names by which it is called.[2] These names range from

[1] Steven Raichlen. "A Tandoor Oven Brings India's Heat to the Backyard." *New York Times, May 10, 2011, D1.*

[2] Ibid., D1.

"tanoor" (Iran), "tandir" (Azerbaijan), "tone" (Georgia), "tonir" (Armenia), and "tandyr" (Uzbekistan).[3] While the names may vary, the function for the Tandoor remains the same: to effectively cook a series of sumptuous foods.

In his article, Raichlen discusses the four unique cooking techniques that occur as food is being cooked within a Tandoor. Raichlen points out that in Tandoori cooking, "direct heat rises from the charcoal, a process akin to grilling. The hot clay walls of the oven cook bread, similar to griddling or skillet-roasting. Radiant heat in the belly of the Tandoor produces results similar to convection baking. And smoke, which occurs as the marinade and meat juices drip onto the hot coals, adds fragrance and flavor".[4] In this way, Tandoori cooking manages to combine the benefits of each of these cooking styles. Meanwhile, though the appearance and general design of Tandoors tends to vary widely, every Tandoor is designed in such a way as to draw air in and trap heat – the combination of which allows Tandoors to reach extreme temperatures of 500 to 750 degrees per charcoal load. Kanika Goswami,

author of "Tandoor Tales" refers to the high-powered, unique heat of the Tandoor as "wraparound heat".[5] This equal distribution of heat explains how the Tandoor manages to cook the food in a way unlike other cooking methods or devices. Traditional Tandoors capture and retain heat from an internal charcoal or wood fire which contributes a smoked effect and tenderness to the food. Today, however, many modern Tandoors –particularly those found in restaurants – are fueled by gas or electricity rather than by charcoal. According to the research of *Los Angeles Times* writer, Barbara Hansen, Tandoor "purists" (that is, those in favor of the traditional cooking methods) argue that the "authentic Tandoori flavor" is lost when one substitutes crucial elements such as charcoal or clay.[6]

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[3] Raichlen, D1.

[4] Ibid.

[5] Kanika Goswami. "Tandoor Tales." *Buzzle.com*. Buzzle.com, 2010. Web. 21 Jul Google. "Google Privacy Policy." Last modified March 11, 2009. http://www.google.com/intl/en/privacypolicy.html.

[6] Barbara Hansen. "New Gas-Powered Tandoor Oven for U.S. Kitchens." *Los Angeles Times*. 1990. July 24, 2011. http://articles.latimes.com/1990-07-19/food/fo-6_1_clay-tandoor.

Whether or not this is the case, remains to be seen. As the popular adage goes, the proof is in the pudding – which, in the case of the Tandoor, is the food.

Common foods cooked in Tandoors include flatbread such as the traditional Indian bread 'naan,' kebabs, and various meats such as Tandoori Chicken and Chicken Tikka. Originally, meat was not cooked in Indian Tandoors because it was difficult to achieve sufficient tenderness. (The exception, reportedly, was stillborn lamb which was considered sufficiently tender as it was).[7] When the process of meat tenderizing *did* begin, it was done with ingredients such as lemon juice and ground mustard. Today, Tandoori meat is tenderized by various ingredients which may include yogurt, raw pineapple or papaya, and, occasionally, vinegar.[8] According to numerous sources, the idea of cooking foods aside from bread inside the Tandoor came in 1920 through famed Hindu cook, Kundan Lal Gujral. In the then-undivided Punjab region of India, Gujral revolutionized Tandoori cooking through his invention of Tandoori Chicken and Butter Chicken – two popular delicacies that have endured in modern Indian cuisine. As the story goes, with the partition of India into India and Pakistan in 1947, Gujral took his newly-popular dishes to Delhi, India, where he started his now-legendary restaurant, Moti Mahal. Uma Vasudeva writes in the foreword to the book, Moti Mahal Tandoori Trail that "Kundan Lal not only made Tandoori cuisine popular throughout India, but also strengthened the appeal of Indian food in many parts of the world.[9] This statement is supported by the fact that Gujral was the recipient of numerous awards for his innovation including the Indian Association of Tour Operators Lifetime Achievement Award as well as a Gold Medal in the Trans Himalayan Selection Award – both for introducing the world to Tandoori cuisine.[10]

[7] Tandoor Tales.

[8] Ibid.

[9] "Moti Mahal Delux Tandoori Trail: Our Story." *MotiMahal*. 2010. Accessed July 24, 2011. http://motimahal.in/about/our-story/.

[10] Ibid.

Learning about the extensive and impressive history of the Indian Tandoor inspired us to do justice to its unique legacy. It was only after much research into its function, style, and design, therefore, that we decided we were ready to commence construction of our own. Reading through blog posts, websites, and magazines led us to compile a working list of materials that were within our budget and techniques that were within our skill sets. We decided that the design for our Tandoor would be original, based loosely on several designs we had stumbled upon in our research as well as on the materials we had at our disposal. (Sites we referred to included http://www.funderberg.com/index.php/crafts/how-to-make-a-homemade-tandoor-oven/ and http://www.rameshtandoor.com/making-of-tandoor.html.) Once we established a reasonable list of materials, we set about locating these items; two trips to the local Lowe's and Home Depot stores accomplished this. Our Tandoor construction materials would include one thirty-one gallon, galvanized metal trashcan with a lid, four 4 x 6 x 12 inch solid concrete blocks, four feet of ½ inch galvanized conduit, two square feet of ½ inch square chicken wire, one sixteen inch terra cotta clay pot, one 80 pound bag of high-strength mason mix (mortar), six 2 x 4 x 6 inch fire bricks, two 50 pound bags of all purpose sand, two 12 x 12 inch sheets of 1x1 inch tile, one quart of pre-mixed tiling grout, a 1 ½ inch mason's chisel, three 4 ½ x 1/16 inch masonry cut-off wheel for the angle grinder, as well as plenty of blood, sweat, and tears.

To begin Tandoor production, two layers of cement block were cut and chiseled to fit in the bottom of the trash can. Once the fitting was complete, both layers of cement block were mortared into the bottom of the can. The purpose of this was to insulate the bottom of the Tandoor as well as to raise the level of the clay pot, which would serve as the Tandoor liner. After the mortar had set, the fire bricks were cut and arranged on the top of the cement pad around the edge of the can. (These bricks withstand high heat and would function as the fire-pot for our Tandoor.) The fire bricks, once fit, were mortared in place. While this mortar was setting, a 4 ½ inch angle grinder, equipped with a mason's wheel, was used to cut out the bottom of the terra cotta pot. The pot was then inverted, placed on top of the firebricks for fitting, and mortared in place. This mortar was cured for twenty-four hours.

The next step was to insulate the Tandoor liner (terra cotta pot) and give structure to the top of the trash can. For this purpose, a small metal frame was welded and riveted to the inside of the can; its role would be to keep

the can from flexing each time the Tandoor was moved. After this step was completed, the remaining space around the liner was filled with sand as a means of insulating the thin, clay wall. At the top of the sand, another layer of mortar was added to keep the sand contained. While the mortar was still wet, a thin layer of grout was applied. This grout was immediately followed by tile, which would give the top of our Tandoor a nice finished look as well as added structure. As a final addition, a small hole was cut in the can near the floor of the oven. A hinged door was made for the hole which would serve as an air inlet and means for ash to be removed.

Upon completion of this step, all mortar was allowed to cure and the structural portion of the Tandoor construction was concluded. The next step in Tandoor construction was to cure or temper the clay liner. (This is done via the first firing of the Tandoor.) A blend of spinach, jaggery, salt, and mustard oil was formed into a paste and applied to the inside walls of the Tandoor liner. The oven was then fired which caused the paste to melt, permeating the pores of the clay as it formed a thin layer on the inner surface of the liner. This curing process is done in Tandoor construction to keep the clay from cracking, while allowing the naan cooked in the oven to adhere correctly to the wall without falling off into the charcoal or becoming stuck to the sides. The paste also gives Tandoori food a unique flavor and smell.

The research we have conducted for the Tandoor portion of our project was quite extensive. This fact is, perhaps, most evident in the intricate and original design of our Tandoor. The Tandoor serves as a tangible representation of the time, work, and energy – both physical and mental – we have invested into making our Indian oven as authentic as possible. As a group, we have paid strict attention to detail, looking at numerous sources for information about the history, uses, and design of Tandoors. Our research has “bread” results in the form of a functioning Tandoor that incorporates traditional materials such as clay, charcoal, and mustard oil in order to most accurately and authentically do justice to the production of North Indian cuisine.

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