

TERRACYCLE: OUTSMARTING WASTE

Research Associate Philippe Margery prepared this case under the supervision of Professors Jan Lepoutre of Vlerick Leuven Gent Management School and Stuart Read of IMD as a basis for class discussion rather than to illustrate either effective or ineffective handling of a business situation. This case is based on widely available public sources, which are listed in Appendix A.

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In 2001 Tom Szaky, a Princeton freshman, founded TerraCycle in the hope of starting an eco-capitalist company built on waste – worm waste to be exact. Tom and his small team had little experience in building a business, but all possessed entrepreneurial spirit.

Eventually, Tom dropped out of Princeton to pursue his dream of eliminating waste. Surviving on the goodwill of family, friends – both old and new – and a tremendous amount of dedication, the team had to constantly keep developing new ideas to keep the business from bankruptcy. The company eventually moved into partnering with companies who would sponsor the collection of waste associated with their brands, and TerraCycle would transform that waste into affordable, high quality products.

In 2006 *Inc. Magazine* named TerraCycle “The coolest little start-up in America” and Tom “The no. 1 CEO under thirty.” By 2011 Tom had successfully built TerraCycle into an icon for environmental sustainability that was projecting US\$16 million in annual revenues. However, sustained profits continued to elude the company, and though Tom was committed to eliminating waste, he was beginning to question whether TerraCycle had the right business model to achieve the triple bottom line, which he clearly articulated in his approach to eco-capitalism:

Every business should aspire to be good for people, good for the environment, and (last but definitely not least) good for profits.

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Boy Meets Worm – The Seed is Planted

Born in Budapest, Hungary in 1982, Tom and his parents, both physicians, fled Hungary as political refugees in 1986, eventually settling in Toronto when Tom was eight years old. From an early age, Tom had entrepreneurship in his blood, establishing ventures ranging from selling lemonade as a kid to founding a web design agency at the age of 14. Then after an inauspicious start trying to grow some special plants with his high school friends, Tom departed for New Jersey to attend Princeton University in 2001; his friends and their plants headed to McGill University in Montreal.

At Princeton, Tom met Jon Beyer, a computer science major. Their shared interest in entrepreneurship led them to the annual business plan competition sponsored by the Princeton Entrepreneurship Club. The grand prize was \$5,000. All they needed was an idea to enter.

During his fall break at Princeton, Tom visited his friends in Montreal and was amazed to find their plants flourishing. His friend Pete had been feeding the plants worm poop, and in just four weeks the plants had produced a bumper crop. An ordinary compost bin filled with *Eisenia fetida* – commonly known as red wiggler worms – had quickly transformed table scraps and other organic waste¹ into a rich fertilizer for the plants. It was then that Tom's idea for the competition was born. The concept was simple. He would use worms to produce fertilizer from organic waste, make money and address a major environmental issue in the process. And if the project came to fruition, it could seed a new breed of eco-capitalism, where the product would be made entirely from waste. But how could Tom build a business on worm poop and garbage with no funds, few connections and little experience?

The Princeton Business Plan Competition

Back at Princeton, Tom and Jon worked on developing the idea for the business plan competition. All they had to do was show that a waste management business could make a profit.

Developing a Viable Business Model

After doing some research, Tom and Jon realized the market was huge: Americans produced 12 to 14 billion tons of waste each year, 80% of which was organic, and paid roughly \$1 trillion each year to dispose of it. On top of that, US consumers spent a total of \$37.7 billion dollars on their lawns and gardens in 2001. Of that, fertilizers, other soils and mixtures for growing plants were estimated to account for over \$6 billion and were growing at a rate of 5% annually. Nearly 60% of Americans bought some kind of fertilizer or plant food every year. Better still, organic fertilizers were expanding at double the rate of chemical fertilizers. The organic material in landfills produced vast amounts of methane gas, which contributed to ozone depletion and global warming. If Tom and Jon could feed that waste to worms and sell products made from worm poop, they could help save the planet. They envisaged that the waste materials would have a negative cost because they would be paid to haul away the garbage the worms would eat. This would mean that they could potentially start with raw material costs that could total as much as minus \$1 trillion. They also learned that worm poop has all the characteristics of a top-quality fertilizer. It seemed to not only provide nutrients for the plants but also improve the quality of the soil.

¹ Organic waste is a type of waste, typically originating from plant or animal sources, which may be broken down by other living organisms.

Source: <wiki.answers.com/Q/What_is_organic_waste#ixzz1b3wWF71H> (accessed 18 October 2011).

Next they had to develop equipment that would allow them to scale up the household worm farm that Tom's friend had in his kitchen in Montreal. Jon eventually came up with the idea of putting the worms on a conveyor belt that would slowly turn away from the center of the device where the organic waste would be poured. The worms would work their way toward the center, leaving their castings (poop) behind them. The castings would eventually be deposited into a receptacle at the end of the conveyor belt. According to Tom, it was "... like a poop-producing treadmill!"ⁱ

The Competitive Landscape

Despite their fears that there would be a lot of competition taking advantage of this great opportunity, their research revealed that the existing worm-farming economy was in shambles. Greg Bradley of B&B Worm Farms had set up two years earlier and had earned \$29 million through an illegal pyramid scheme in which over 2,900 clients bought worm-farming equipment. (Bradley was eventually found dead following a cocaine overdose in 2003.) This left Tom and Jon with no real direct competition and the expectation was low that new competition from the worm-farming community would emerge, as people burned during the previous round of investing were unlikely to invest more hard-earned money in the industry.

Other potential competitors were landfills and composting sites. However, because of the disastrous impact of landfills on the environment, an alternative would no doubt be welcome. Composting sites had a similar business model to Tom and Jon's. However, Tom and Jon's worms were able to process the waste much faster (in about 20% of the time) and the quality of the fertilizer was superior. Also, composting sites were spread over huge areas and emitted a foul smell, whereas worm farming was virtually odorless. All in all, the industry looked promising.

The Business Plan Competition

Tom, Jon and a few others put together a detailed 100-page business plan for the worm project. It turned out that not everyone was enthused by worm poop, so the original team of eight eventually reduced to three – Tom, Jon and Noemi, an art student. They were confident they would win the contest.

After qualifying for the second and final round of the competition, which added to their confidence, Tom's team and the three other finalists had to deliver a formal presentation to the jury. Given their strong business plan, Tom and his team viewed the presentation as a formality. Much to their surprise, however, they ended up in fourth place – the only place in the final round for which there was no prize money. They soon realized that the judges had only skimmed their lengthy business plan and that their poor presentation had put the judges off reading it in more depth. It was a painful lesson. As Tom explained:

Though we lost the Princeton business plan contest that cold day in March, we gained something more valuable: We understood the need for sizzle with the steak, a lesson we'd carry with us for the rest of our careers. We'd figured out what we'd done wrong, but was it too little too late?ⁱⁱ

The three were disappointed and deflated. Was it time to call it quits?

Taking the Plunge

Though student life continued, neither Tom nor Jon could let go of the idea. The problem was they had no idea how to make it a reality, especially how to extract the worm castings from the container where the worms feasted on organic waste. Then one day Jon came across “Harry Windle’s worm gin” while surfing the web. The machine seemed to do exactly what they wanted on an industrial scale. According to Tom:

The second I spoke to Harry, I could tell he was a complete nut, but he was our kind of nut – a crazy inventor, a mad-scientist type whose business was making massive worm machines and compost screeners. Harry’s system hinged on the same conveyor-belt principle that our idea had, only he took the concept to a whole new level – literally. Harry’s worm gin boasted conveyors stacked on multiple levels and could accomplish what we’d imagined in a tenth of the space.ⁱⁱⁱ

Tom and Jon had reached a moment of truth. Finding a solution that met their needs bolstered their enthusiasm for the idea, so they negotiated a \$20,000 deal with Harry. The problem was neither of them had that kind of money. Tom and Jon’s combined savings amounted to \$5,000, which they sent to Harry as a down payment. Then Tom contacted an old high school friend who agreed to lend them another \$5,000. Finally, Tom pushed the credit on the card his parents had given him to the limit. Within a month, they managed to reach the magic \$20,000 they needed. Next they had to figure out where to get the waste to feed the worms once they had the worm gin. Eventually, after several meetings with various parties, they were able to get approval to remove the organic waste from Princeton’s Wilcox Dining Hall every day during the coming summer and bring back the empty barrels each evening. The tedious process of obtaining Princeton’s approval had a benefit; it allowed them to fine-tune their pitch. Finally, their steak was beginning to sizzle.

In mid-June Harry drove onto the Princeton campus with a brand new worm gin. TerraCycle, as they had decided to name the company, was born. But their problems were not over yet. They quickly realized that they needed to break the waste down so the worms could consume it easily. They were able to get their hands on a wood chipper, but by this time a few weeks of waste had accumulated. So the first day Tom and Noemi had to make several trips transporting the organic waste from the dining hall back to their base near Princeton University, where they shoveled it into the wood chipper, which ground it into a homogeneous sludge. Then they transferred the sludge into the worm gin where the worms were eagerly waiting. Unfortunately, the wood chipper kept getting clogged, so they had to regularly reach down into it to clear the obstacles. At around 2:30 in the morning, while manipulating the last barrel of foul-smelling, maggot-infested, rotting food, it fell over and the contents landed all over Noemi. She backed off in disgust, turned around, threw up and quit.

Cutting Their Losses

Jon left his summer job to help Tom shovel the rotting waste. As time wore on, the worms continued producing poop, but no one was interested in paying to have their waste removed or in buying the magic fertilizer. Tom and Jon had not budgeted for food and lodging and found themselves sleeping on the floor of their friends’ dorm rooms and eating whatever they could get their hands on. The pair spent many sleepless nights worrying about the debts they had racked up with friends and family. Each evening they sent their business plan to every venture capitalist they could think of, and each time they were rejected, if they heard back at all. After many months of hard work, the money had run out and debt was accumulating, so Tom and Jon resigned themselves to cutting their losses and giving up on the worm project. They would sell the worm gin and use the proceeds to help pay back some of the loans they had received from family and friends.

They had one last commitment – a previously scheduled live interview on a local radio station – which felt like the ceremonial burial of TerraCycle before they went back to school in a month's time. They told their story on the program and left the station with a copy of the recording in hand.

An Unexpected Lifeline

As closure seemed imminent, an unexpected event offered a new opportunity. Tom received an email that he initially mistook for spam and almost deleted. It said, "I WANT TO INVEST. CALL ME."^{iv} Suman Sinha, the sender, had heard their story on the local radio station that morning and wanted to see them. That night, Tom and Jon had dinner with Suman and left the restaurant with a check for \$2,000.

The money gave them the time they needed to regroup. Priority one was to find a place to stay. They ended up renting a cheap basement space that had one central room and two small offices that would function as bedrooms. Showers would be taken at the gym. As for furnishings, Tom and Jon had gone "dumpster² diving" for chairs, desks and computers. It was all student waste they found in the trash on move-out day.

Tom and Jon fulfilled their promise to Princeton to dispose of the organic waste from the dining hall. But with summer coming to an end and school starting, they did not have time to continue production. Though they were still in business, they had to shut down the worm gin, box up the worms and store them in their office. After their summer experience, they realized that they would have to process several hundred tons of waste in order to turn a profit. This would require dozens of employees and worm gins, as well as millions of worms. And though worm poop was excellent fertilizer, to which everyone who tried it could attest, selling it had not gone to plan.

Survival Mode

It soon became clear that the \$2,000 investment was not going to last. They needed more money, and they needed it quickly. They came up with the idea of presenting a hairdresser friend from Los Angeles as a celebrity stylist to the Princeton community. They were able to fully book him for a weekend, which turned out to be lucrative enough to pay the rent. Inspired by the idea, they started to host art parties on most weekends during semester. One of the party regulars, a senior named Hilary Burt, convinced her father to invest \$6,000 in TerraCycle. A lot of Princeton students who attended the parties also offered to volunteer at TerraCycle, which allowed the company to keep its nose just above water.

Though school was back in session, Tom could not stop thinking about how to build TerraCycle and make a difference to the environment in the process. Early in the fall, he asked a Canadian friend to join the company. Robin Tator, who had given Tom his first job ten years earlier, had a couple of ventures of his own, but one of them was a seasonal ice cream business, so he had some time and agreed to spend one week per month at TerraCycle in exchange for a share of the company.

² A dumpster is a large industrial trash container, sometimes called a skip outside the United States.

Redefining the Business

Tom and Jon's biggest challenge was figuring out what business they were in. So far no one outside the university was willing to pay them to haul organic waste away, so they decided to abandon the idea of being a waste-management company for the time being and focus on selling the vast amount of worm poop fertilizer they had accumulated. While they always planned to sell the fertilizer, they were quickly realizing that it was a necessity rather than just a nice additional source of revenue.

So off they went in jeans and t-shirts, trying to sell worm poop in plastic bags with black and white labels that said "Pure Worm Poop." As a cutting edge environmental company, fancy packaging and lots of flash just did not seem like their style. Yet their sales success was not forthcoming. Eventually, Robin, whose background was in marketing, came up with the idea of bottling the fertilizer in spray bottles. Liquid fertilizers also had a number of advantages over solid ones. And transforming the solid worm poop into a liquid would be relatively straightforward and would not require complex or expensive machinery. They put the liquefied worm poop – or tea as they called it – in a spray bottle with a label they had designed themselves with a new name: TerraCycle Plant Food. They now had a product to sell.

Treading Water

As the fall wore on, Tom found himself spending more time figuring out where next month's rent was coming from than he was on his studies. So as the semester drew to a close, Tom decided to take a leave of absence from Princeton. Around the same time, Priscilla Hayes, who was responsible for solid-waste management in the county, introduced TerraCycle to the EcoComplex at Rutgers University. The Rutgers EcoComplex had a mission to "research and educate people about environmentally sound business practices." TerraCycle was a perfect fit, and it became the EcoComplex's first and only occupant when it set up its worm gin in the incubator.

Over the winter, Tom kept the company afloat by entering and winning several business contests including reentering the Princeton competition and walking away with first prize. He also recruited Bill Gillum, a highly experienced chemist with a PhD from MIT who was looking for a new challenge. Bill joined TerraCycle's team, which consisted of mostly Princeton interns, as director of operations, and spent his first six months shoveling poop.

Despite various injections of capital, TerraCycle found itself chronically short of cash. With only \$500 in the bank, its existence was in peril. So Tom and Jon decided to participate in the mother of all business plan contests: the Carrot Capital Business Plan Challenge. The winner would take home \$1 million.

Carrot Capital: The Mother of All Business Plan Contests

TerraCycle made it through the first round of the competition and on Saturday, April 26, 2003, Tom and Robin headed to New York City, where they found themselves adrift in a sea of white shirts and power suits. Each team had 20 minutes to present its case before a panel of judges. The day ended with a cocktail party for all involved at the Forbes building on Fifth Avenue. The judges and sponsors seemed to mingle with everyone – everyone except Tom and Robin. At one point, Robin called Tom aside and said:

There's no point in staying here. We're out of it. They're not even looking at us. We've got better things to do. Let's go run a company.^v

But lured by the promise of a free meal, they decided to stay for the awards dinner. As dinner progressed, the losers were called. When they did not hear their name, Tom and Robin became increasingly confused, until eventually, much to their surprise, they realized they had won.

The following Monday, the whole TerraCycle team – about thirty people – met with David Geliebter, Carrot’s managing partner, in New York City where they opened the NASDAQ and were interviewed on some news shows including CNBC’s *Power Lunch*. Over the following weeks, Carrot would work up a deal sheet about the specifics of the prize. When David and some investors arrived at the EcoComplex to discuss it, they took Tom aside and explained that they were not interested in the environmental benefits of producing and selling worm poop. They were more interested in the organic nature of the product because they saw a big opportunity in the fast-growing organic fertilizer and plant food market.

The following week Tom was invited to New York to meet with the Carrot Capital people alone. They got straight to the point. They did not want Bill or Robin or any of the other managers; they wanted Tom and they wanted to make him the “poster child” of organic fertilizers. They would bring in their own team to take over every aspect of the business. By telling his story, which he had become adept at doing, Tom could become rich and famous.

A Turning Point

Despite the promise of fame and fortune, Tom turned down the \$1 million prize money from Carrot Capital. Needless to say, Carrot Capital was not pleased, and warned Tom that TerraCycle did not have a chance without them. But dropping the environmental angle, as Carrot Capital wanted to do, made no sense to Tom. The combination of environmental solutions and economic potential was the foundation of TerraCycle’s business model. Plus Tom did not want Carrot Capital to oust his friends who had dedicated so much of their time and energy to the company.

The day after Tom turned down the Carrot Capital prize money, all of the TerraCycle people met in the basement of their Nassau Street office. Desperation was in the air. Though they had become experts at living on close to nothing, they could not go on that way for much longer. They needed to buy bottles to package the fertilizer solution, but the \$500 they had available would not go far. They had to figure out a way forward. As Robin dropped into his chair, it nearly flipped over. Tom looked at him and said, “It’s garbage, man.” Indeed, garbage would prove to be the perfect solution to their problem.

When Jon suggested grabbing used bottles from people’s recycling bins as a temporary measure, Tom picked up on it right away:

That’s a brilliant idea. We have a product that is made from garbage, that could in fact be considered garbage. Why not package it in garbage?^{vi}

That same night, they decided to raid some recycling bins. It was originally meant to be a temporary solution, but the more time they spent chasing used plastic bottles, the more Tom was warming up to the idea as a permanent solution.³ It was not what he had envisaged when

³ Each year Americans discarded more than 200 billion soda bottles, rather than recycle them. The environmental impact was enormous. Not only do soda bottles take thousands of years to degrade, it takes millions of gallons of oil to produce and ship them and they release poisons into the air when they are incinerated. They are so lightweight that recyclers are not paid much to handle them and recycling plastic bottles is also very costly as there is such a variety of different inputs in different bottles, which makes virgin plastic a more attractive option.

starting TerraCycle, but it was perfectly aligned with the whole concept. Re-using something would definitely be more profitable than recycling something – and it would be better for the environment. As Tom explained:

Waste is an entirely human concept. There is really no such thing in nature as waste. Everything is used; everything decomposes to become the building blocks of something else. More than that, the concept of waste is entirely a modern human idea. Basically, it didn't exist until the twentieth century with the invention of plastic and complex petrochemical materials. ... The basic paradigm of eco-capitalism is that an object can have components that are waste and components that are valuable. The idea is to focus on what is "waste" and find a way to use it.^{vii}

To their surprise, they found out that there were only four bottle sizes by volume – two liters, one liter, half a liter and twenty ounces – and they all took the same size caps. Even more surprising was that the bottles all had the same height and diameter, which meant they could be run through a high-speed bottling machine. Now all they needed were spray triggers for the bottles. After a little research, Robin discovered that there were enormous numbers of spray triggers available from companies that no longer had a need for them because of changes to their packaging. By redefining a waste stream as a resource stream, TerraCycle was moving beyond environmentally friendly capitalism. Waste was no longer something to write-off; instead, it was an asset.

What started as a desperate measure was turning into THE solution: selling a product that was entirely made up of waste. It was clearly a turning point for them – and all because they had turned down the Carrot Capital money.

Now the team needed a plan for acquiring more waste bottles. So far, the company had survived thanks to volunteers and goodwill, so Tom and gang figured they should ask people to collect bottles for TerraCycle. They came up with the idea of paying schools a minimal fee for each bottle they collected, and the company would pick up the bottles. As a result, the bottle brigade was born and it was a tremendous success. The kids understood that they could benefit the planet and they were excited about it. They also liked the idea of seeing the bottles they had collected appear on store shelves.

Despite all of this, TerraCycle still needed cash.

Lift Off

Tom met the man who would become his biggest backer, Martin Stein, at a stockholder meeting that he attended as a proxy as a favor to a friend. During the meeting, Martin was sitting beside Tom and asked Tom who he was and what he did. After hearing about TerraCycle and its financing problems, he asked Tom how much he needed. Tom, who was tired and not prepared to go into the numbers in depth, just said, "\$500,000." Martin must have been impressed by Tom because he said, "I'm in. I'm your partner." Tom was skeptical, but the next day Martin called and went over to see the business – the office where Tom slept and worked. Not only did Martin provide the funding the company needed, he went on to become a strong supporter and a part of the company family. And unlike Carrot Capital, there were no strings attached.

Going Big

TerraCycle had gone with a "start-small" model, which was a lot of work, and meant their sales would always be limited to a case here and a case there to local stores. They had tried trade shows but to no avail. So, they started knocking on the doors of big stores and received

some small orders from Home Depot. It was not enough to feel they were finally “in business” but it meant they needed more space for production. TerraCycle Plant Food soon became the fastest-selling fertilizer on HomeDepot.com and Tom wanted to be ready when the real orders started coming in. The Home Depot order seemed to have opened a few doors and other big stores were finally starting to listen.

By the beginning of the summer of 2004, TerraCycle had 35 employees. Tom found a house to buy in a crime-infested neighborhood in New Jersey and an empty factory not too far away. He felt he needed the house to provide accommodation for the many interns working at TerraCycle.

Luckily, the media had kept up their interest in Tom and TerraCycle. As a Canadian television crew for CBC was filming a segment on TerraCycle, Robin received a call from Walmart. It wanted to place a massive order for every store in Canada.

The Walmart Order

Robin and Tom had been calling Walmart non-stop for quite some time and they were finally successful in getting a meeting with the buyer of garden supplies in Toronto. They were given 15 minutes. Tom and Robin knew from the first few seconds that the man in front of them would not do them any favors. They put three juicy tomatoes on the table. When the Walmart buyer asked what the tomatoes were for, Tom said:

We wanted you to see what an amazing job our plant food can do on the vegetables. And the other reason is that, if you don't like what we have to offer you this morning, you can throw the tomatoes at us.⁴

It broke the ice and thirty minutes later they were still talking. The buyer from Walmart loved the concept – a product made from waste, packaged in waste, with a competitive price and good margins for the retailer. At the end of the meeting, the Walmart representative said:

I thought I'd heard everything but I was wrong. How much do you think those tomatoes weigh? About two pounds?

Tom nodded. The man took three dollars out of his pocket, handed the money over and said:

Thanks for the tomatoes. They look good.

When the order came, it was for 100,000 bottles, worth \$250,000 to TerraCycle – four times bigger than their combined sales for all of 2004. But there was no way they could fulfill the order. The factory was not operational, they only had one worm gin, a single, malfunctioning bottling line and the few interns they had were due to leave for the Christmas holidays. The order was due to be shipped in mid-February – in two months' time. Furthermore, they needed bottles. As Tom explained:

Once the reality hit it was gut-wrenching. When you are an entrepreneur, you just make decisions that seem right at the time. The scary thing is you are always making decisions without knowing the future. Should we have waited to go to them [Walmart] until we had all the inventory and machinery we might need? What if the order hadn't come in – we would have been broke and without the energy boost that comes from getting something like the Walmart order.^{viii}

⁴ Szaky, Tom. *Revolution in a Bottle: How TerraCycle is Redefining Green Business*. New York: Penguin Group, 2009, p. 74.

The brigades could not deliver sufficient bottles fast enough, so Robin visited every recycle center in the region, but they only had crushed bottles, which were of no use to TerraCycle. Fortunately, TerraCycle was located close to New York, a bottle-bill state where individuals were paid \$0.05 for each bottle they returned – and those bottles were not crushed. Robin and Tom met with the director of a recycling center in New York and proposed buying the bottles before he had them crushed for the same price as he would sell them crushed. The director hesitated as new processes had to be put in place but in the end he agreed.

At midnight on February 4, TerraCycle officially started production for the Walmart order. After twenty hours per day for 15 days straight, they delivered the order on time, proving that eco-capitalism can work on a large of scale.

Publicity in Canada exploded after they shipped the Walmart order. CBC's hour-long documentary about TerraCycle, with Robin taking the Walmart call, was broadcast as they were finishing up the order. Suddenly, dozens of stores that had never returned their calls started to get in touch.

Another break came in 2006 when *Inc. Magazine* named Tom the “#1 CEO in America Under 30,” as part of their coveted “30 under 30 Awards.” The magazine also ran a cover story hailing TerraCycle as “The coolest little start-up in America.”

Defining a New Business Model: Sponsored Waste

With worm poop fertilizer sales finally kicking in, Tom started to think about what they could do next.

We had always been dumpster diving for our office furniture, but that was the first time we realized that greatly expanding our dumpster diving could fuel our production line. We had discovered that contemporary America is a vast dumpster of industrial products that manufacturers are constantly throwing away or recycling – even when they're in perfect condition. That opened the floodgates for TerraCycle.^{ix}

With the amount of waste generated in America by consumers skyrocketing to 250 million tons per year – almost 1 ton per person per year – America's biggest export by weight was waste, and the majority of it was non-recyclable. In talking with his friend Seth, who operated a business producing organic juices for kids under the “Honest Tea” brand, Tom learned that environmentally aware companies would pay to have their branded waste handled. With a recyclable product, the onus is on consumers to do their part. However, with a non-recyclable product, the consumer does not have a choice. Seth had invested in a scheme whereby kids would return pouches to the company. However, Honest Tea represented only a tiny fraction of the juice pouch market. More than 90% of the pouches came from Capri Sun and Kool-Aid. Soon after his conversation with Seth, Tom received a call from Gary Hirshberg, CEO of Stonyfield Farm Yogurt, who had the same problem with yogurt cups.

Then, coincidentally, Tom discovered PREDA, the People's Recovery, Empowerment Development Assistance Foundation, founded in 1974 in the Philippines by Fr. Shay Cullen and Merle and Alex Hermoso. PREDA's original goal was to help teenagers from broken homes deal with problems of substance abuse. In September 2004 recovering teens from PREDA began producing, selling and shipping items made from waste juice pouches. This seemed like the perfect model for TerraCycle. Tom demonstrated a few ideas for products made from recycled drink pouches and Seth loved the idea of sponsored waste. TerraCycle now needed to hire someone to administer a drink pouch brigade and Seth offered. TerraCycle would pay \$0.02 for each pouch and would organize collection. The investment

Seth made to protect his brand's eco-friendliness would turn waste into a valuable resource for TerraCycle – and the schools and organizations that would collect them would also benefit.

Tom wanted to start with one hundred brigades to test the model. They announced it on their website, and within twenty-four hours they had the candidates they wanted. A similar movement happened with the yogurt cups. Wishing to spend as little energy as possible upcycling a product on which a lot of energy had already been spent, the easiest product to produce for the yogurt cups was planting pots; which would also fit in perfectly with their Home Depot line of products. Gary loved the idea and joined in to sponsor a yogurt brigade.

Tom and his team kept developing ideas for waste drink pouch containers – pencil cases, lunch boxes, backpacks and many more – and started presenting them to retailers. The retailers were enthusiastic and some even thought the products had an Andy Warhol touch to them. By the spring of 2007 the number of brigades had grown from 1,500 to 4,000.

It was then that Walgreens, one of America's biggest retailers, placed a huge order with TerraCycle for juice-pouch pencil cases, an order for which they would need 10 million juice pouches. Even though the folks at TerraCycle had become used to Tom's increasing habit of selling without product, this order was way beyond their capacity. The brigades could not get enough juice pouches in time. Luckily, Robin found a solution in British Columbia, where juice pouches were recycled through deposit. When Robin called Encorp, the government agency that dealt with recycling these pouches, he asked what they did with them. "We store them," was the answer. Robin's heart skipped a beat. "And so how many would you have then?" he asked. "Well, about 20 million," was the response. In the end, TerraCycle and Encorp came to an agreement; TerraCycle could have them all.^x

Just when Tom and Robin thought it was all sorted out, they discovered that almost all of the pouches were of brands owned by Kraft Foods, the biggest food company in America. Encorp would not release the juice pouches without Kraft's agreement. As Tom explained:

Going up against Kraft Foods in a lawsuit was scary.⁵ At this point, I had all the purchase orders from the stores in hand, so there was no backing out. I called Kraft.^{xi}

Sponsored Waste Goes Corporate: The Kraft Foods Partnership

In 2008 Tom contacted Kraft Foods just as the food giant was looking for ways to help divert packaging that could not be recycled from going to landfills. Although sustainability was not new to Kraft Foods, there had been an increased sense of focus in the years leading up to Tom's telephone call. Kraft had worked hard on building sustainability into its business strategy and on changing its corporate culture. TerraCycle's business model was in line with Kraft's ambition to rethink how packaging was used and how it could reduce its environmental impact. A core team devoted to sustainability provided strategic direction from the very center of the company. It helped provide focus, direction and leadership but, ultimately, it was up to the business leaders of each of the company's categories to decide on and execute specific projects that impacted their business. Tom had first approached Kraft with a specific need in mind: upcycling waste, and more specifically Capri Sun pouches across the USA. TerraCycle was receiving a significant number of them from the drink-pouch brigade sponsored by Honest Tea and was making pencil holders out of them.

⁵ TerraCycle had previous experience with a lawsuit from a large multinational firm, when Scotts, the garden products firm, sued TerraCycle over allegedly copying Scotts product. The lawsuit was eventually settled, but the cost to TerraCycle was very high.

However, even though the empty pouches were waste, Kraft Foods still owned the brand. Tom's enquiry to the Capri Sun team was directed to the corporate sustainability team within Kraft. When they met Tom, Kraft's corporate sustainability team liked what they saw in the eager, young entrepreneur. He seemed confident, aspirational, customer oriented, creative, somewhat experienced (for a 27-year-old) and projected a strong can-do attitude. As Jeff Chahley, senior director of sustainability at Kraft Foods commented:

We were working hard to optimize end-of-life solutions and find ways to encourage the right behaviors such as recycling. One way we found to do so was to partner with innovative companies like TerraCycle, which had solutions for non-recyclable packaging and rewarded consumers for sending it to them rather than putting it in the trash.

TerraCycle's size made starting a partnership with it somewhat of a risk for Kraft, but the potential for success was there. Kraft felt that TerraCycle had a unique business model that educated people and rewarded them for doing the right thing. Also, TerraCycle already had experience working with retailers such as Home Depot through its fertilizer product. The corporate sustainability team could see TerraCycle playing a key role in its packaging end-of-life strategy, and recommended that the Capri Sun team take a chance on sponsoring the young company's work. Jeff commented:

We weren't afraid to take a chance on a smaller partner or an upstart with the right know-how, because the results can be huge.

So, once senior management was convinced of the program and its merits, approval to proceed was obtained and Capri Sun struck a deal with TerraCycle, making Kraft Foods TerraCycle's most important branded waste partner and TerraCycle a key element in Kraft's sustainability program.

It was not long before Capri Sun was benefiting from positive PR. Seeing the success Capri Sun was enjoying with the program, including positive feedback from consumers and the grassroots involvement that TerraCycle promoted, other Kraft Foods brands decided to get involved.

Though the Kraft partnership gave legitimacy to TerraCycle and the environmental industry as a whole, it also resulted in a lot of trash for TerraCycle. While it was able to turn some of the materials into backpacks, tote bags and pencil cases, orders for these upcycled products were not enough to turn a profit. Garbage was piling up in TerraCycle's warehouses, and so were its losses, which totaled \$4.5 million on sales of \$6.6 million in 2008. Being "the hottest little start-up in America" was no longer enough; the time had come to show that eco-capitalism could turn a profit.

By 2009 the partnership with Kraft had started to produce significant volume. Capri Sun, for example, had more than 35,000 locations where millions of pouches had been collected and over \$250,000 had been donated to schools and other charities. The Kraft initiative, including the cross into Canada with Kraft in 2009 and subsequent partnerships with Mars and Kimberley-Clark, had been largely enabled by the success of TerraCycle's earlier partnerships with smaller companies, such as Honest Tea and Stonyfield Farm yogurts. The sponsorship of collection programs of these larger companies was TerraCycle's biggest source of revenue.

By 2011 several Kraft Foods brands were involved in collection brigades for drink pouches (sponsored by Capri Sun, Kool-Aid and DelMonte), cookie wrappers (sponsored by Nabisco Cookies), cheese packaging (sponsored by Kraft Cheeses), lunch kits (sponsored by Oscar Mayer Lunchables), Tassimo packaging, Kenco eco refill bags, Tang pouches and gum

packaging (sponsored by Trident). TerraCycle was in multiple countries by this time and had grown its range of partners to include some of Kraft's peer companies like Frito Lay (Pepsi), Stonyfield Farm, Mars, Wrigley and many others.

With more than 120,000 locations around the world with around 2 million people in total collecting post-consumer waste, Kraft was the key partner and largest sponsor for launching the TerraCycle program in most new markets. It supported them in Argentina, Brazil, Canada, Ireland, Mexico, Sweden, Norway, Denmark, the UK and the US with plans to launch in more markets in 2012. Together with TerraCycle, Kraft developed a scorecard to track progress that included countries, brigades, number of locations, units of waste diverted through consumers' actions, tons of waste diverted from factories, PR hits and impressions, and so on. Working with TerraCycle had enabled the company to divert more than 130 million household packages and 3,800 tons of manufacturing waste away from landfills or incineration.

Following the initial successes of the partnership, TerraCycle was also bringing new ideas to Kraft's marketing teams in the various regions in which the two companies had partnerships. The relationship with TerraCycle had evolved from "waste-centric" to "growth-centric" – from managing Kraft's non-recyclable waste to working with Kraft as a marketing partner. And it rapidly became clear to Kraft that the biggest impact of working with TerraCycle came from the holistic investigation of the supply chain that the partnership demanded. For packaging, this meant optimizing product design, using the right source materials and figuring out up front what to do with it after consumers were done with it. It was also about the source ingredients and the impacts all the way up the supply chain.

The Kenco coffee brand in the UK became one of Kraft's biggest success stories. Kenco coffee beans were already 100% sourced from Rainforest Alliance Certified™ farms. TerraCycle helped Kraft design the packaging and work with consumers to collect used eco refill bags to be upcycled into new consumer products. As a result, this was the first offering in the Kraft product line to meet its 2015 sustainability objectives. For both firms the successful results raised new questions. The initial TerraCycle agreement had just covered the upcycling of existing packaging, yet the relationship was already extending far beyond.

A Choice between Profits and Growth?

TerraCycle was changing the way a large number of people were thinking about waste. But the hard work of the collection brigades and the creativity of the TerraCycle team had not been enough to turn the company into a profitable business. TerraCycle's strategy had been about growth – aggressive growth. But as Tom explained:

Until 2008, the more we grew the more money we lost. ... There is an explicit expectation of aggressive revenue growth. ... It hasn't always synched with that other very important line on our profit-and-loss statement: the profit.^{xii}

The first year TerraCycle produced a profit was 2010, and it was a modest profit at that. The company executives constantly struggled with whether they should favor revenue growth over profits or if they should de-emphasize revenue growth in favor of profit growth. Different investors preferred different approaches. Some favored a short-term earlier exit while others preferred a long-term payoff. An IPO was not something Tom was considering, stating he preferred to remain private. Instead, he was in it for the long term and growth was his priority.

Where's the Cash?

TerraCycle had averaged a yearly compounded growth rate of 103% since its inception and it was projecting revenues of more than \$16 million in 2011. Reportedly, close to 25 million people were participating in its worldwide collection programs, collecting over two billion non-recyclable packaging units and generating more than \$4 million for schools and non-profits. These results had put TerraCycle on the Inc. 500 list but were still not rooted firmly in the profitable zone.

TerraCycle continued to explore alternative product and distribution strategies that might pave the path to profit. For example, it arranged an agreement with DwellSmart to offer products online that were not initial sell-outs with retail partners such as Walmart. It also added an important industrial revenue stream – plastic pellets made out of low-quality plastic waste that was not suitable for upcycling. The pellets were then sold to extrusion molding manufacturers who turned them into products. Ironically, one of the products these companies produced was large plastic trash bins.

At the same time, a Brazilian investment group bought a minority interest in TerraCycle's Brazilian subsidiary. The new investor injected capital and resources, which allowed the Brazilian business to grow at a much faster rate and the proceeds of the sale brought liquidity back to investors in the parent company. Tom remarked on these developments:

This approach, should we choose to roll it out more broadly, might be a way for a relatively small company to develop strong local partnerships to turbo charge activities in foreign operations, while also creating cash to let earlier investors in the parent company exit. That would allow the company to remain private, independent and focused on growth. So far, it seems like both our short-term and long-term investors like this approach.^{xiii}

Tom had successfully built TerraCycle into an icon for environmental sustainability that had attracted investors en masse. It had established itself as a leader in innovation based on its entrepreneurial culture and mindset. However, this same innovation had resulted in a diverse set of activities and products and, beyond the fact that they were all built on waste, the synergies between each were not always clear. The company was struggling in its efforts to produce so many products that it knew nothing about, and none of the products had achieved the scale necessary to be deeply successful consumer products. Investors, suppliers and customers were questioning if TerraCycle knew what business it was really in. While Tom believed the company should hold strong to its core – eliminating waste – he was beginning to question whether TerraCycle had the right business model to consistently achieve a necessary and important element of his triple bottom line – profits.

**Exhibit 1
Financial Figures**

2011	
3-year growth	329%
Projected revenue	US\$16 million
Employees	80

2010	
Revenue	US\$13.2 million
Employees	60

2009	
Revenue	US\$6.6 million
Employees	50

Founded in 2001	
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Source: "Inc. 500." *Inc. Magazine*, 2011.

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- ^v Szaky, *Revolution in a Bottle*, p. 41.
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