

TRIZ in the Produce Aisle:

An experiment applying the Theory of Inventive Problem Solving to supermarket products

by Jono Hey



On our last trip to the supermarket, my wife and I were passing the salad dressing shelves when something caught my eye: Salad Spritzers. Salad dressing you spray on to your salad. My wife had already anticipated my usual refrain and began to roll her eyes. “Ooh, let’s get that! It’s more advanced,” and I threw it into the cart. This has become a standard feature of our supermarket shopping trips since I learned about trends of evolution.

Trends of evolution are a tool from a lesser-known design methodology known as the Theory of Inventive Problem Solving or TRIZ (the acronym is Russian). The story starts with a young Uzbekistani inventor, Geinrich Althshuller, who, tired with the trial-and-error approach of designers and inventors, began to formulate a science of invention. With a team of researchers he set about analyzing thousands of patents, leading to several important insights. Perhaps the most intriguing of these was the observation that technology across different industries evolved over time in repeating patterns. With a little abstraction these patterns were codified as trends of technology evolution. These trends can be used to take a peek at what might be coming next. And this brief excursion leads us right back to our Salad Spritzers.

Salad Spritzers have several things going for them that make me, with my engineer hat on, label them “more advanced.” They effectively make the next jump in a trend known as segmentation, which holds that products fulfilling certain functions

will evolve into smaller and smaller parts, which is why soap has been slowly evolving from a solid bar, to liquid, to foam, and now a spray. Salad Spritzers have made the same jump for salad dressing: from a liquid to a spray. Compared to a standard liquid dressing, Salad Spritzers increase the “surface area” of the dressing—rather than a pool at the bottom of my bowl, each leaf gets its own fine coating of droplets. Here segmentation provides three key advantages: a finer and more controlled dispersion of dressing, less effort to dress my salad, and making a little dressing go a lot further.

As an experiment, I’ve extended my idle shopping-time observations, applying TRIZ to three common trends in action in the supermarket: segmentation, use of more dimensions, and evolution of surfaces. It turns out that these sorts of seemingly minor innovations are happening all over the store, and, with a little knowledge of the trends, you don’t have to wait until inspiration strikes to make these leaps yourself.

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Segment for Flexibility, Convenience, and Flavor

Animals and vegetables come in discrete sizes, but other than winning contests, giant turnips don't provide a lot of value. Sometimes we feel like a snack, sometimes a feast, but we always want just the right amount of food. We create flexibility by making things in small pieces, allowing us to portion out just the right amount while also making it easy to share.

It's no accident that we grow tomatoes and **trim down carrots** so that they can be eaten small. Not only do they have the freshness of youth but they have the convenience of a bite-size version. They're more flexible.

Bite-size ice cream was on its way as soon as the smart people at Dreyers could figure out how to do it. The bite-size pieces allow both snacking and wolfing and are easy to share.

By driving foods towards pieces, pastes, liquids, and sprays, segmentation also helps make things more convenient. Convenience is such an important part of food that a multi-billion dollar packaging industry constantly works to help transition our lunch to our mouths at just the right moment. Sometimes convenience is about reducing the amount of human work required before you can eat—cutting out steps in preparation (crumbled feta) or saving you from cutting it on your plate (chicken nuggets). So while few argue that shredded cheese tastes better, it's hard to disagree with its versatility and the convenience of not having to grate it yourself.

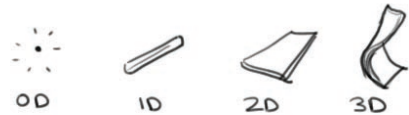
Spinach is a kind of more advanced lettuce. Mouthful-size leaves save tearing standard lettuce and helps you get just the right amount in your sandwich. The proliferation of pre-prepared salad is a testament to the strength of our desire to simplify our lives.

Fun size, party size, mini...whatever you call them, candy is now increasingly segmented for ease of sharing and flexibility in use. Don't expect it to stop at mini size either.

Other times convenience is more about speed of action—how to get the flavor from your food without the hassle. For example, **garlic, lemon grass, and chili are a whole lot more convenient as a paste**. This form unlocks the flavor faster and more easily than peeling each garlic clove.

This time you can't believe it's anything like butter, but spray butter has the same advantages in cooking, baking, and sandwich making as other sprays.

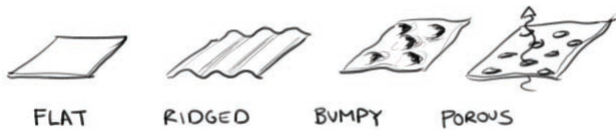




Use More Dimensions for the Optimum Shape

Usually products are straight and flat because that is the easiest way to make them. Straight things with hard corners are easy to cut, but that is rarely the optimum shape for any product. One trend involves using more dimensions to make a product, evolving from a point, to a line, to a curve. Fries, built out of potatoes, one of the most shapeable foods, nicely illustrate this trend in action. In this case the evolution of fries seeks to maximize surface for flavor, get that perfect crispiness, and speed up cooking.

The **original** is shaped by the straight knives that cut them. **Crinkle cut** increases crispiness and flavor surface (a good example of surface segmentation). **Lattice** fries take crinkle cut to another dimension crinkling in two dimensions. Fries finally evolve to a fully **3D curve** and become more interesting to eat. How long before the crinkled curly fries?



Evolve Surfaces to Control Texture

A somewhat non-intuitive idea is that being flat does not utilize a surface to its full potential. One whole trend of evolution is devoted to the evolution of surfaces from flat, to ridged, to dimpled, to porous.

Crinkled potato chips add strength, and therefore crunch, without having to make the chips thicker. The increased surface area and valleys also provide more chance for the flavor to stick—something **twisty donuts** take advantage of too. A waffle’s corrugated surface allows uniform heat distribution so it cooks evenly and fast. The handy hollows that remain are perfect for holding syrup. **Crinkle cut carrots** and pickles keep a firm and interesting texture even when they’re overcooked.



Where TRIZ Falls Short

I’m willing to bet that a few of these foods made you recoil despite TRIZ providing a functional framework for understanding them. TRIZ is a good way to fuel innovation, but perhaps innovation is not always what we are looking for from our food. We don’t eat only because we’re hungry, and thus the act of eating is more than just a process to be made efficient and to optimize. We eat to explore, we eat socially, we eat to relax, we eat to preserve and extend traditions. So while squeezey cheese may be a practical choice to coat your nachos, you’re unlikely to serve it after a romantic meal, where a circle of French brie may be more appropriate.

Much of the innovation in food products really gets used in the kitchen, where often their more functional attributes are important. Garlic paste may be just what you need to speed up your cooking and get maximum flavor, but it doesn’t double as an attractive plate decoration.

Meaning plays a role in preparing food in some cases as well. You probably are glad to get a cake on your birthday even if you’re not hungry or don’t like cake because someone baking you a cake shows that he or she cares about you. Betty Crocker found this out in the 1950s when they released ‘just add water’ cake mixes, no hassle mixes that you only needed to add water to and then bake. It turned out that ‘just adding water’ didn’t feel enough like baking a cake for the lucky husband. So Betty Crocker created a mix that also

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required cracking in an egg—just enough to feel like you’re helping create the cake. Easy to make is not always the best goal, because food is for more than just eating.

Experimental Conclusions

I feel, in conclusion, that it is fun to apply TRIZ to food, but that it may not always be apt because food is about more than advancement and innovation. However, TRIZ does seem to be a useful tool in predicting what new ideas are likely to arrive on grocery market shelves, and some of those ideas do have utility. Innovation in your supermarket continues to this day. So on your next trip there, see what you can try because “it’s more advanced.”

