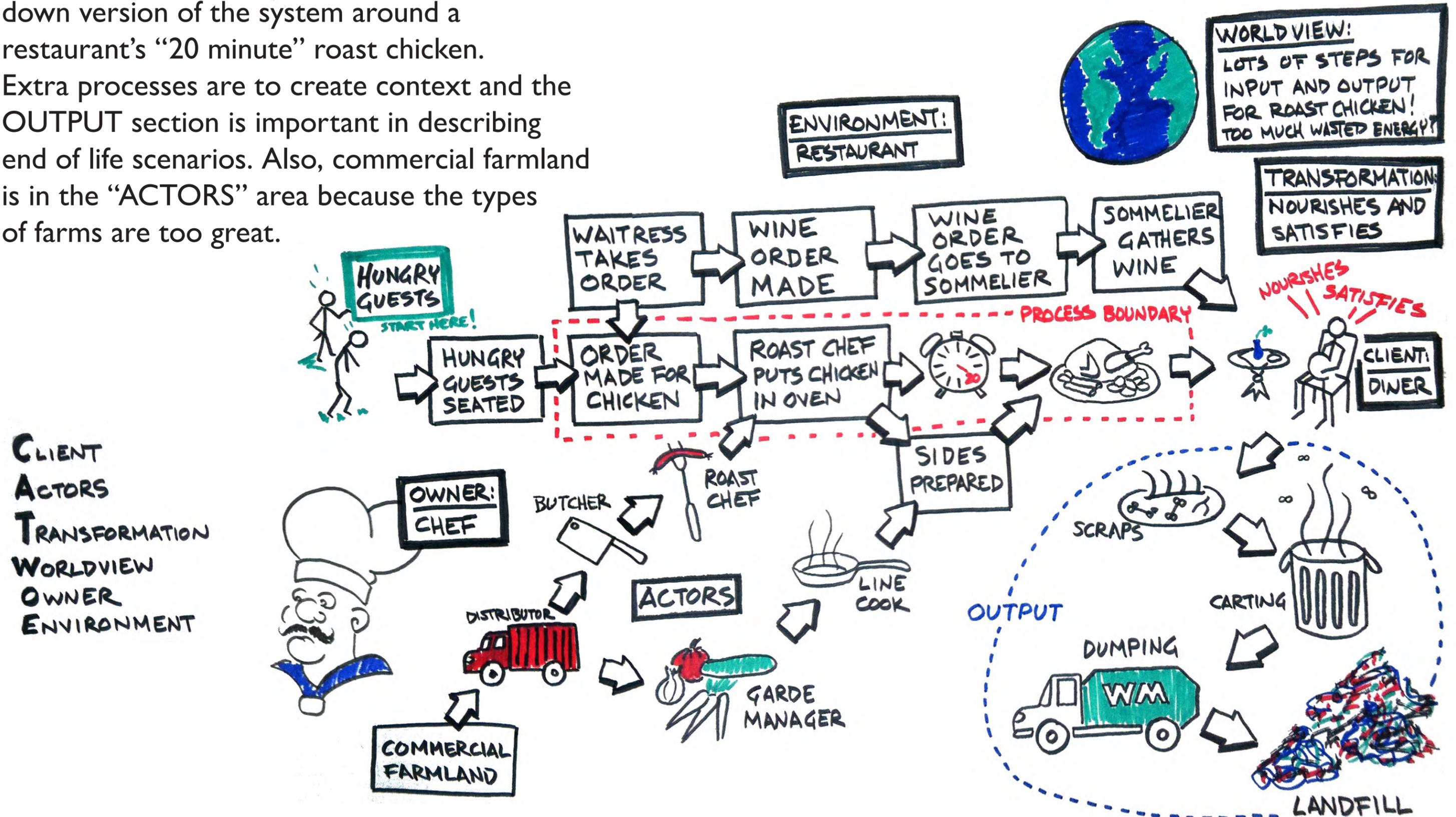


# UNDERSTANDING SYSTEM PROBLEMS AND SOLUTIONS

NOBLE CUMMING :: SYSTEMS THINKING  
PROJECT TWO :: NOVEMBER 10, 2012

# THE SYSTEM

Wonderfully complex, this is still a dumbed down version of the system around a restaurant's "20 minute" roast chicken. Extra processes are to create context and the OUTPUT section is important in describing end of life scenarios. Also, commercial farmland is in the "ACTORS" area because the types of farms are too great.



# FUNCTION AND BEHAVIOR

Primary Function is to nourish and satisfy

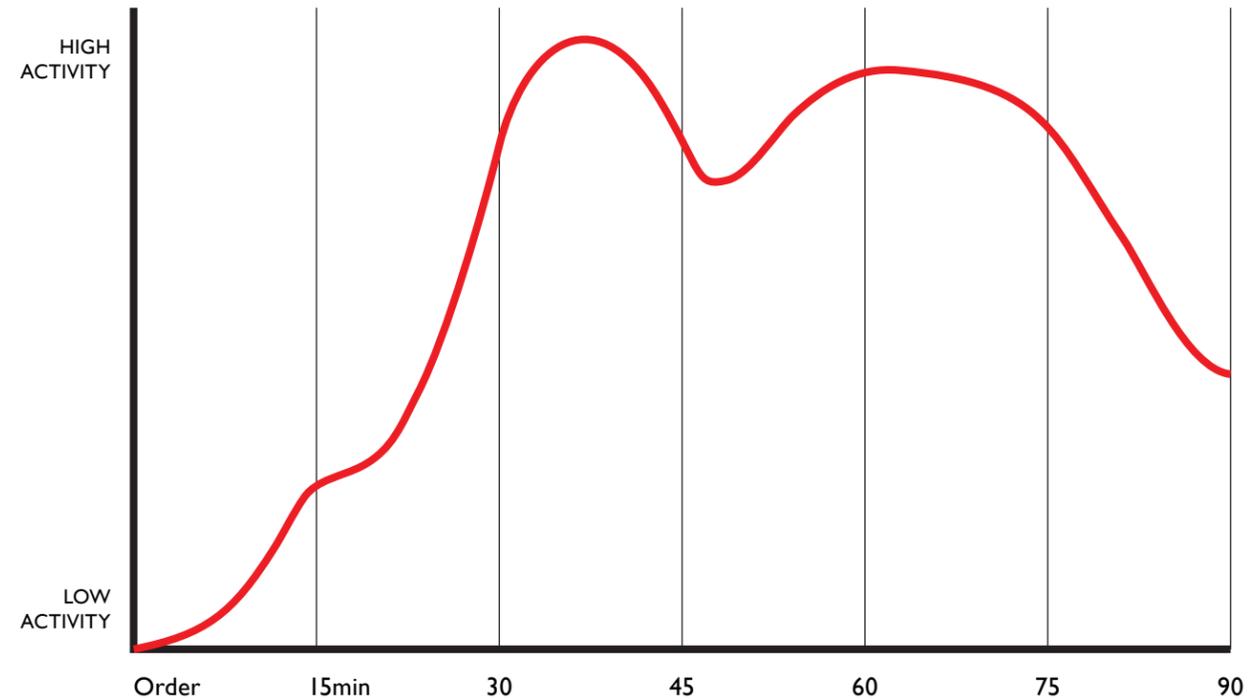


Secondary Function is pleasure.

>> INPUT: Ingredients, Stress, Fire, Electricity, Gas, Fatigue, Dishes, Grills, Ovens, Refrigerators

>> OUTPUT: Trash, Grease, Dirty Dishes, Food Waste

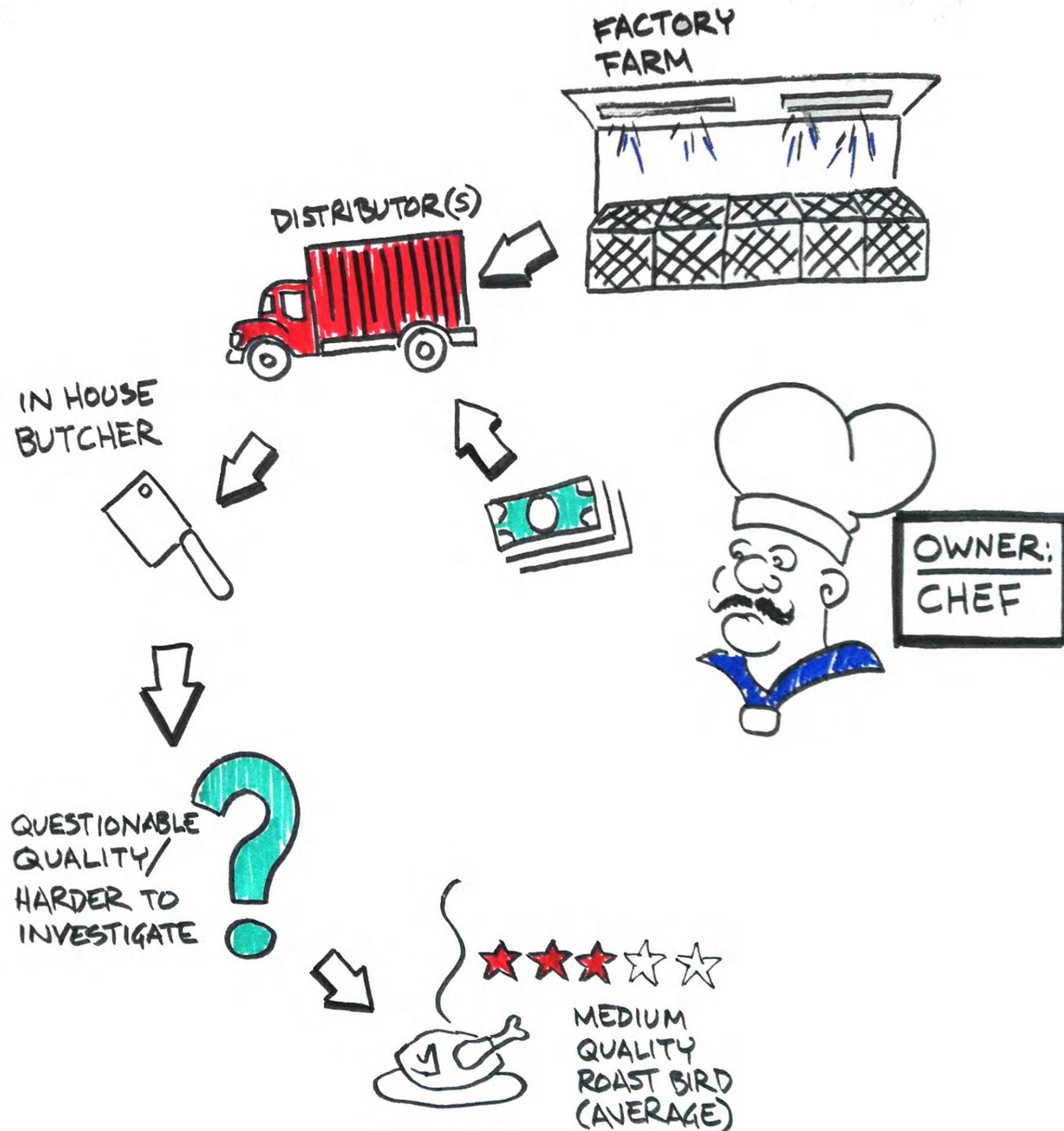
Behavior is Dinner cooked and served



The “20 minute Roast Chicken.” As an order is placed, it is sent to the kitchen where it is called out by an Expediter (usually the Sous Chef). At 10 minutes, the prepped chicken is placed in the oven, while the cooks set to work on other side dishes. After 20 minutes, the chicken is set to rest. Served at 45 minutes, there is a flurry of activity when diners dig in. This activity winds down slowly as the diners finish eating and leave.

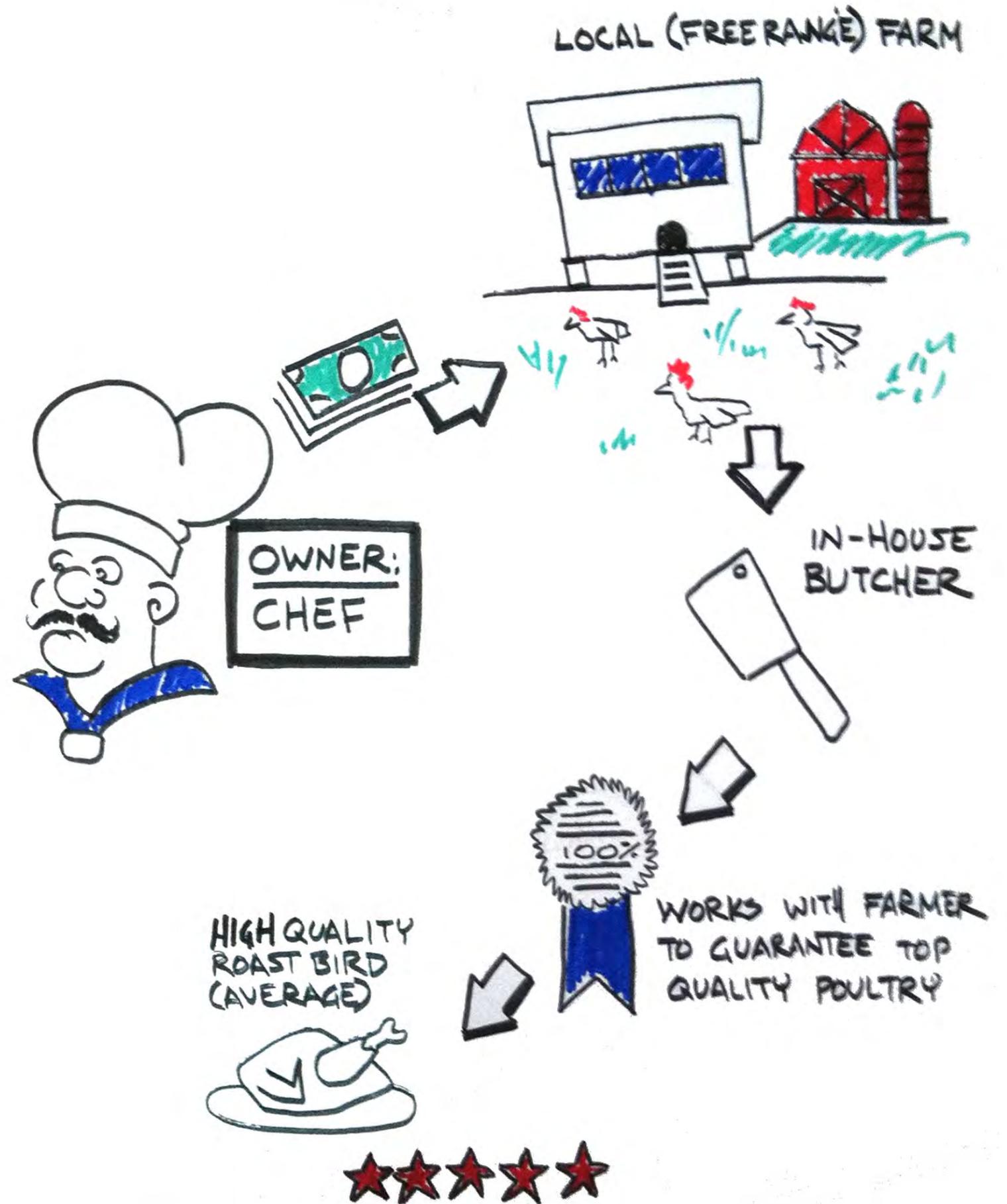
## PATTERN #1

Getting the chicken from conventional sources is easy, but keeping the quality consistent isn't. The truth is, the chef (or procurer) purchases their chickens from a distributor and not a farmer. In fact, they are buying their chicken from a distributor two or three steps from the farmer due in part to the distance the chicken has likely traveled. This can translate into quality shifts that affect the final product and therefore the reviews of the chef. Thankfully, the butcher's cuts and a good chef can help this. But, not much...



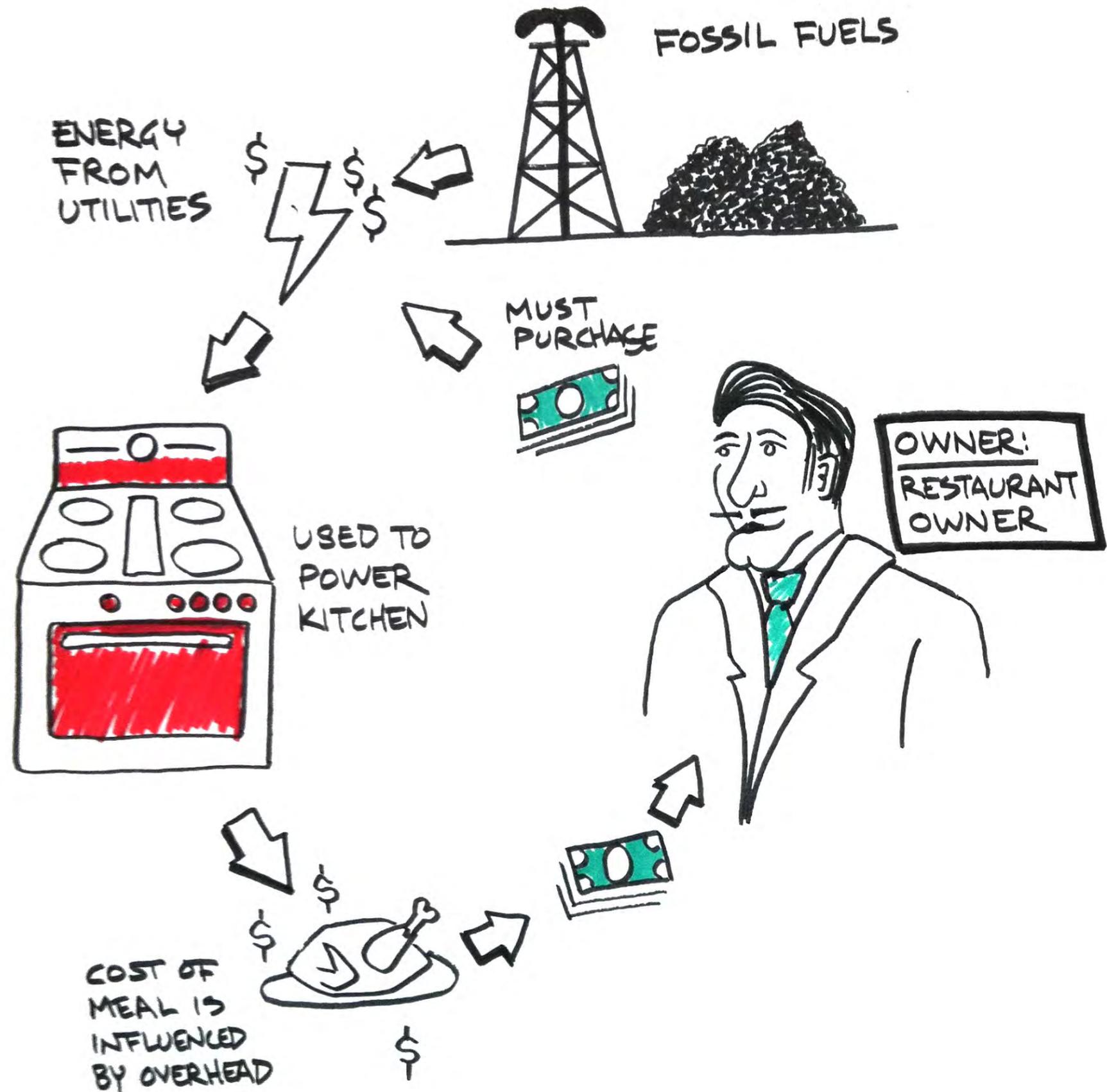
## SOLUTION #1

Locally sourced, free range chickens are a wonderful alternative to conventional sources of fowl. Specifically for the chef and without considering the typical benefits cited by local food lovers, these birds are generally going to be of higher quality and consistent to the needs of the chef as he will be in direct contact with the true source of the product. In other words, the chef ensures his own quality, not some faceless factory farmer.



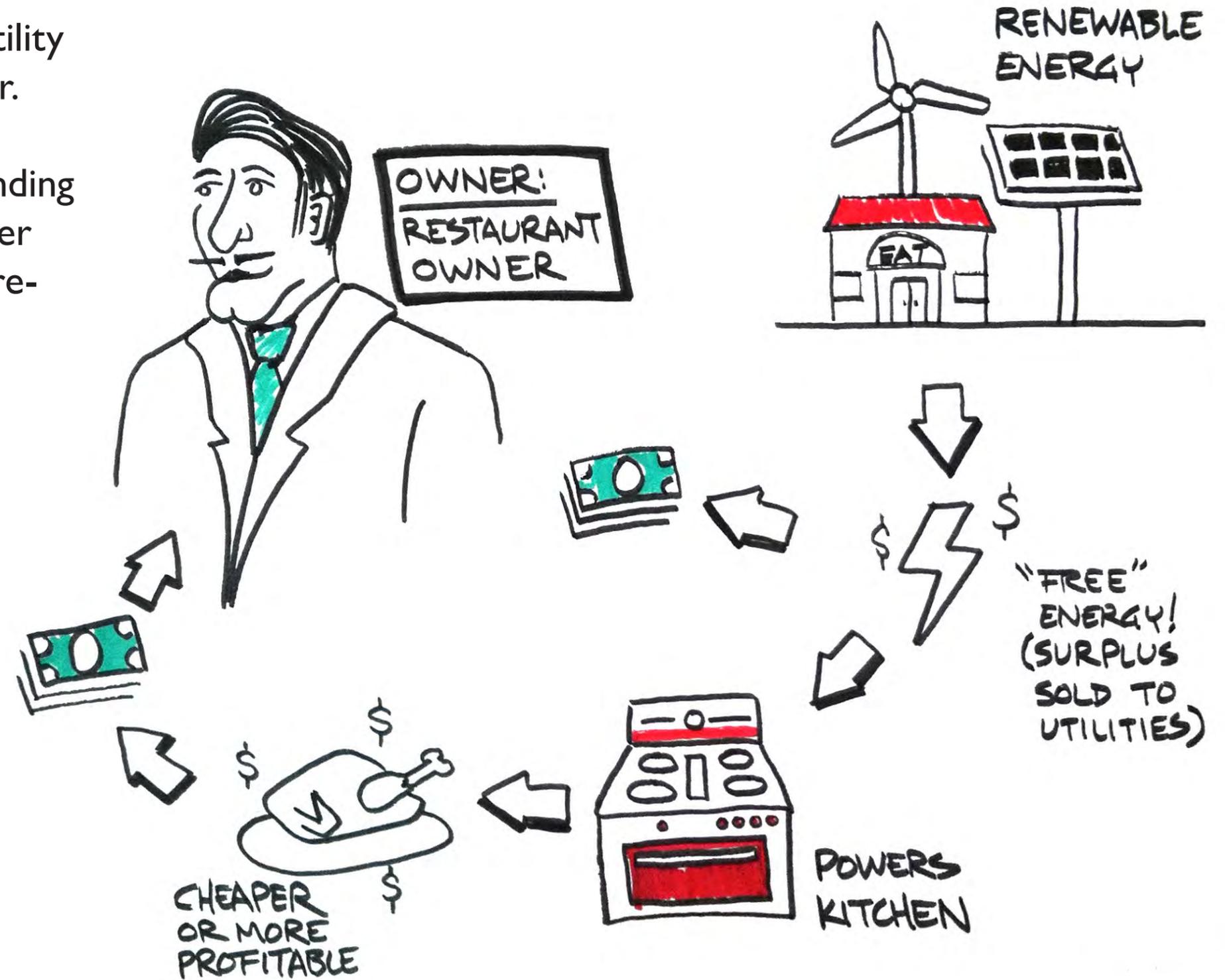
## PATTERN #2

An old saying goes that when you eat out, you're not paying for food, you're paying for rent. This is only partially true. You're also paying for a myriad of operational needs as well as the paychecks of the employees. Of these overhead expenses, energy in the form of electricity, gas, and in the case of New York City, steam, can be a bear. The owner has to pay for the dining room being lit and the oven running for several hours at a time.



## SOLUTION #2

A facility with renewable energy sources like solar and wind not only saves energy but whatever surplus it has goes back to the utility and puts money in the pocket of the owner. The lower cost of energy overhead in turn affects the overall price of the food. Depending on the owner's priorities, the chicken dinner will either become cheaper or more a more-profitable menu item.



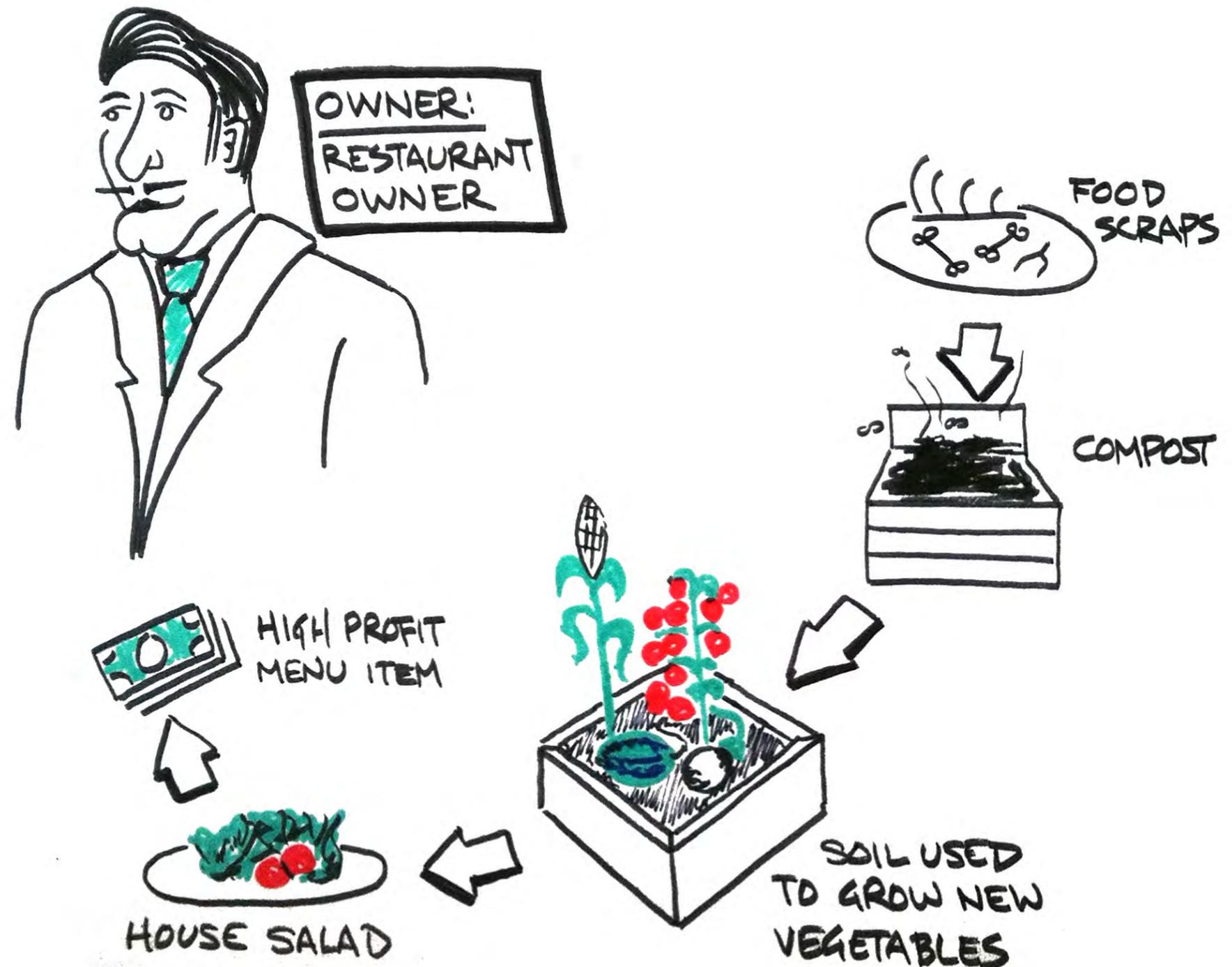
# PATTERN #3

Waste management methods are conventional. Regularly, food waste gets landfilled and in the case of New York City, travels hundreds of miles to do so. Unused food scraps are also trashed. For restaurants, professional carting services are often required. This costs money, a lot of money depending on the municipality. Like in Pattern #2, this is overhead which affects the cost of the food.



### SOLUTION #3

Composting and anaerobic digesters can solve the issue of the food waste. This can reduce carting fees almost to the point of elimination. The resulting compost soil can be either given or sold to a composting seller, or it can be used as fertilizer for a kitchen garden. The vegetables can be used for something like a house salad, which would henceforth become a very high profit menu item.



**THANK YOU**