

An ethnography of reason: following a recipe

Josh Tenenberg, 20-June-2025

In this document, I carry out what Livingston (2008) calls an *ethnography of reason* as a way to make audible and visible the actions that I take in carrying out a simple task, that of cooking when following a written recipe. The ethnography of reason is a form of empirical description adapted from Livingston's studies using ethnomethodological methods of inquiry. The ethnography of reason involves a first-person account of an individual carrying out a task within an enviroing context. The key data concern the descriptions of the phenomena that the actor takes themselves to be involved with, both the perceptions and recognizability of particular entities and relations in the environment, and the responsive actions that the actor takes on these objects. These accounts are often accompanied by images that make visible to the reader what it is in the environment that the actor is seeing and responding to. Rather than treating action as being preceded and directed by explicit thought, action is treated as an attuned mode of response that is first and foremost an absorbed form of dealing with the environment that the actor is facing. The account produced makes explicit what the skilled actor does, often without conscious thought, while they are busy within the midst of the activity itself.

Livingston uses this method to investigate activities in which he himself, as the subject of the ethnographies, already has some experience in carrying out. These activities include putting together a jigsaw puzzle, folding paper into an origami shape, writing a mathematical proof, and solving a tangram puzzle. Livingston calls these studies ethnographies of reason largely to critique the Cartesian and computationalist perspective typical of "classical" cognitive science (Johnson-Laird, 2010; Miller et al., 1960; Simon, 1996), in which the activities under examination are presupposed to require considerable prior reasoning (inner and mental) for a skilled actor to successfully carry out. Livingston makes visible in these ethnographies the way in which skilled performance emerges from embodied interaction between a human actor and their material environment as well as their prior history of interaction in similar such contexts. I have chosen this example because of its focus on human instruction following, a domain of human activity that a computationalist worldview asserts is like how computers execute programs. The analysis shows the extent to which metaphors that equate human minds as being like computers so quickly break down. What I intend with this analysis is to retrieve an embodied and experiential sense of mundane human action that is easily overlooked when the computationalist worldview predominates.

The task at the heart of the ethnography is following a recipe to cook a particular food item. The recipe that is followed is given in the boxed section in Figure 1. I obtained the link to this recipe from a Google search on the term "grilled cheese sandwich" (in quotes), where this was the first recipe listed on the first screen that was returned.

<p>Grilled Cheese Sandwich</p> <p>Ingredients 4 slices white bread 3 tablespoons butter, divided 2 slices Cheddar cheese</p> <p>Directions Preheat skillet over medium heat. Generously butter one side of a slice of bread. Place bread butter-side-down onto skillet bottom and add 1 slice of cheese. Butter a second slice of bread on one side and place butter-side-up on top of sandwich. Grill until lightly browned and flip over; continue grilling until cheese is melted. Repeat with remaining 2 slices of bread, butter and slice of cheese.</p>

Figure 1: Recipe for cooking a grilled cheese sandwich, retrieved from www.allrecipes.com/recipe/23891/grilled-cheese-sandwich/ on August 24, 2019.

I have purposefully chosen a recipe with few ingredients and steps in the interests of keeping the exposition relatively short while still being long enough to display the relevant phenomena of interest. There is nothing otherwise special about this choice of recipe.

Ethnographic background

I am a native English speaker, having lived my entire life in the United States, several decades in states on the west coast, and a decade each in the Midwest and upstate New York. In the late 1970's, I cooked professionally for one year at a small coffee shop in a residential neighborhood in the San Francisco Bay Area, where "grilled cheese sandwich" was one of the menu items, an item that I frequently cooked. Shortly afterward, and also in the same region, I worked for two years at a couple of upscale restaurants as sous chef. Since that time, I have continued to cook for my housemate(s) and myself on a regular basis, and in the late 1980's I taught a 6-week course at a museum (equipped with a classroom kitchen) in cooking from seasonal, locally-sourced ingredients. I have eaten many grilled cheese sandwiches in my life, though the last time I did so was at least a decade ago. I have looked at and cooked from hundreds of recipes in my prior experience as a cook.

The cooking described here takes place in the kitchen of my home, using ingredients and materials that I have there, sufficient for making the simple recipe that I have chosen. My kitchen is typical for middle-class homes in the United States, with a refrigerator, sink, and cooktop configured in a small triangular shape, the cooktop on an island in the middle of the kitchen as illustrated in the images below. Continuous cabinets and countertop link the different parts of the kitchen together, the cabinets containing kitchen accoutrements such as spatulas, pots, pans, dishes, silverware, and similar.

The recipe-following activity was undertaken in a single session and recorded by a still-image camera and two audiovisual recorders placed nearby. I endeavored to carry out this cooking activity in the workaday way that I normally cook when following a recipe. When I noticed inner dialogue, I would speak this aloud only so that it would be audible within the recording; otherwise this dialogue would have remained unspoken. Speaking it aloud made this dialogue empirically available for later analysis and also set off from those parts of the recording in which such inner dialogue was not noticeable to me because I was fully absorbed in purposive action. Within a few hours of the cooking activity, I wrote a narrative of the cooking experience as it unfolded, based partly on what was remembered as well as on watching and listening to the recordings. The narrative's focus is on the actions and perceptions, as well as the inner dialogue when it emerged. This narrative is written in sans-serif font, indented, and placed within a box in order to clearly mark it out from the surrounding text.

The surrounding text (outside the boxed narrative) is comprised of analytic comments that draw out the significance of the enacted events within the narrative. The analytic comments are informed by a broadly Deweyian theoretical framework that take habit and the organism-environment nexus as orienting concepts (Dewey, 1922, 1925). In placing these analytic comments in a typographic form that is distinct from the narrative proper, I mean to signal that these comments are "out of time," that is, a gloss that I provide *after* the events that I narrate. This is particularly important to note, given that unless a reader recognizes this fact, all of the discursive thoughts that these analytical comments represent would appear to contradict the very point that I am making, i.e. that cooking is largely carried out as habituated activity with little discursive thought. Subheadings have been added to help the reader understand the temporal divisions of the larger activity but were not an endogenous aspect of the activity. That is, they were not present as I cooked and hence did not structure or organize the action, appearing here only for expositional purposes. Images are drawn from the still photographs that I took before and after the cooking, as well as image capture from the audiovisual recordings at various points in the cooking. These images are provided to clarify indexical references within the narrative and to give a

Preparing to cook

I quickly scan the recipe ingredients, noting that I have each of these ingredients on hand and don't need to make a special trip to buy them.

In scanning the ingredients, I recognize and treat the contents of the recipe as a grilled cheese sandwich recipe. My recognition of this as a recipe is likely because its form is customary, and I have habituated familiarity with reading recipes in this form. My recognition of this as a grilled cheese sandwich recipe could be due to the words “Grilled Cheese Sandwich” that appear in bold at the top, or that the photograph (not shown in the reproduction of the recipe above) looks like a grilled cheese sandwich, or that the ingredients are customary ingredients for a grilled cheese sandwich. Or it could be that as my eyes pass over this recipe that all of these perceivable characteristics contribute to the recognizability of what I am looking at. I state these all as conjecture, because the recognition was so fast, as were my eye movements, that I doubt I can identify any single source for my recognition.

The ingredient list is the first part of the recipe that I read, a list that is separated and labeled “Ingredients” as part of recipe-writing custom. On reading these ingredients, I note that these ingredients are all present in my home without any need to go shopping. This part of the recipe, then, is treated as a checklist, where the presence of the ingredients within reach is verified prior to the start of cooking. This verification is not something that is explicitly carried out by looking at the stock on hand, though nothing prevents this, and it is common enough an action by experienced cooks, especially when the recipe calls for a large number of ingredients, or ingredients that are not commonly used. In the case of this grilled cheese sandwich, though, the checking is through a “sense” of what is already in my house given my existing shopping and list-making habits for ensuring that certain items (which include cheese, bread, and butter) are always present and available at home.

The particular ingredients that are actually within reach, however, are not only a matter of what my habits make available. The presence of these ingredients also “shades off” into a set of background situational factors that are not mentioned in the boxed text above and never come to mind but are nonetheless partially determinative of what is within reach and hence the actions that I take (or do not take) at this moment in time. These include such things as that I live in a geographic location and have the economic means that permits obtaining and storing at home these particular ingredients. There are many for whom bread, cheese, and butter are not easily obtainable, or there is no refrigeration within the house for storing perishable dairy products, or the high probability of insect infestation or high humidity makes the storage of bread unlikely. Or perhaps the cost of these ingredients is prohibitive, beyond the means of most people in a region. So the context in which I engage with this recipe is as important as my prior habits for what ends up being done in its particulars. And this background intrudes into the cooking experience thus far only insofar as they manifest in an embodied “sense” that the required ingredients are on hand. But, because these situational factors can vary so significantly in other situations of following this very same recipe, the particular actions carried out in any instance of a person following this grilled cheese sandwich recipe will also necessarily vary, and to an almost infinite degree given the unbounded nature of the background upon which these actions depend.

I read through the directions for cooking. They are what I would expect—they look like how I would do things if uninstructed and I have everything in my kitchen that I will need in order to follow them.

The only violation of my expectations is when I get to the last sentence: “Repeat with remaining 2 slices of bread, butter and slice of cheese.” Reading this, I realize that a moment ago I had read the ingredients list too quickly and not noticed that this recipe is for making two grilled cheese sandwiches, which seems strange. Why would a recipe for a grilled cheese sandwich specify ingredients and instructions for making two of them? Any recipe follower can repeat the instructions for one sandwich without any need to be told to do so, for as many sandwiches as the occasion requires. I had simply presumed on reading the ingredient list that the quantity of ingredients was

just what I expected it to be, that is, for making one sandwich, the conventional number for most recipes, which is the quantity that I will make.

And now that I am noticing the quantity of ingredients for each sandwich, it strikes me that one slice of cheese is not very much for two slices of bread—it might be too bready for my taste. So I may use more cheese, will just see what looks right once I actually start cooking.

Saying that the directions are “what I would expect” and “how I would do things” indicates that these directions are recognizable in both form and content. Looking more closely at these directions makes visible what I (as the cook) take to be shared between the recipe writer and myself. The first sentence says, “Preheat skillet over medium heat.” The verb “preheat” is somewhat strange in that, within the cooking context, it typically means “bring up to cooking temperature.” In other words, “preheat” means the same as “heat,” the “pre” used to emphasize that this happens before and in preparation for subsequent cooking; custom and habit dictate that one does not start to cook in a skillet that is cold. “Skillet” may be unfamiliar to some (the Oxford English Dictionary indicates that this term is chiefly used in North America), designating a cooking pan or a frying pan. The use of this term rather than another is unremarked in my narrative, indicating my familiarity with it. And this is the case even as there are a number of different choices that I have in terms of which skillet to use from what I have at hand, such as its size (a 6, 8 or 10 inch diameter), or the pan’s material of construction (cast iron or stainless steel). But none of these arise as choices that I explicitly deliberate upon, at least at this point.

What is implied though never stated in the recipe directions is that this cooking pan is to be placed on a cooktop, resting on one of the burners, flat side down. Neither does the recipe specify in what hand the pan might be taken up, how it is to be held, how to operate the cooktop, how to butter bread, how to “flip over” the sandwich that is cooking, what may be an endless elaboration of embodied activity. Nor do I have any difficulty interpreting which surface is designated by the “skillet bottom,” even as there is a surface different than the cooking surface that I would also call the “skillet bottom,” viz. the surface that rests on the burners and onto which the burner flame will be directed. None of these details is included in the directions of the recipe, even as any particular cook will have to work these out in order to achieve success in cooking the grilled cheese sandwich. What the cook will also have to work out is what “medium” heat is in relation to the heat range of their particular stove, and the “generosity” of their buttering in relation to their taste and judgment. Also never stated is that once the pan is brought up to the appropriate temperature it should be left there throughout the duration of cooking, rather than being removed and placed elsewhere, as obvious as this might sound. It is in fact the sandwich’s being left on the heated skillet that *causes* the cooking, which is similarly never stated but is taken as known by the recipe reader. In addition, it is the surface of the pan (the “skillet bottom”) that actually does the grilling, though this too is never stated in the directions. But all of these taken for granted and never stated understandings are necessary in order for any recipe follower to bring off a successful grilled cheese sandwich. But this “bringing off” will be different in every culture, every kitchen, and in fact every instance in which the recipe is followed, since each instance takes place in its own unique and unbounded situation.

So the recipe directions generalize above the specifics of any particular kitchen and cooking situation, leaving it to the reader to work out these details in their own situation. But the directions are not fully universal and context-free, in that they presuppose an existing familiarity by the reader with how cooking objects and actions that comprise the recipe are described, not just in an intellectual sense but in an embodied sense of how to actually and correctly do the specified operations on the indicated objects within the particulars of their situation. That is, the recipe directions presuppose the follower’s habituation to a general custom for many of the mundane aspects of cooking (such as how to hold a pan, how to place it on a burner, and all the rest). Another way to say this is that there is an appropriate (hence normative) level and type of description for this recipe within a recipe-writing genre, and that in general, I, as the actor in the cooking activity, simply act under the presupposition that the recipe writer and I share these genre norms.

We see this normativity, and that “in general” the directions comply with what I take them to be in the one place these norms are violated. For this violation is remarked upon, viz. the strangeness that this recipe makes *two* grilled cheese sandwiches rather than a single one. And in noticing this, what I also remark upon is that I

had, in my earlier reading, simply presupposed that the recipe was for one sandwich. So it was my habit as much as my eyes that read the recipe, “seeing” what is not there, though going back later and reading more carefully to note my earlier error. What my comments also exhibit is that the violation of expectations is the first time that I shift into an explicit reflective mode. I am no longer saying “yes, the usual, as expected, I can do this” in a habitual mode of simply getting on with things, but am now engaged in a discursive inner dialogue where an anomaly is noticed and has to be dealt with. That is, I have encountered a problematic situation where my habitual mode of reading has run into an inconsistency, requiring me to reread what I thought I already understood. In this case deliberate and reflective thought is brought to bear to resolve this conflict, a resolution that becomes embodied in subsequent action. In this particular case, the confused situation is sufficiently resolved in the emphatic statement that whatever the recipe says that only a single sandwich will be made.

What also arises in my noticing of the proportion of bread to cheese is an imaginative leap forward to a point in time in which the sandwich as currently specified has been completed and is found to be “too bready”. This wording indicates that I already embody what we might call “a grilled cheese sandwich esthetic” concerning the proportionality and balance of ingredients, and that this guides the considerations that I devote to this task. This esthetic is not simply an intellectual understanding of how much of each ingredient should be measured out, as if there is a homuncular scientist within, measuring the world objectively and at a distance with rods and meters. It is, rather, an embodied anticipation of the experience of eating the sandwich and the affective response that this will generate, based on my having eaten a lifetime of meals in my past, grilled cheese sandwiches among them. According to Dewey, this esthetic is the distinguishing quality that marks off one experience from another in the ongoing flow of human existence, an esthetic that permeates and guides every aspect of activity as the sandwich (or the object of whatever experience one is in the midst of) comes to be produced (Dewey, 1980).

Yet in remarking that more cheese might be used than the recipe specifies, I take myself to have license to alter the recipe, that as the cook I am entitled to do so. And as revealed below, I use a different type of bread and cheese than the recipe specifies. We can wonder, then, to what degree this license to substitute ingredients extends, which is also likely to entail changes to the way in which the food is cooked? For instance, does this license permit adding ingredients, such as sriracha sauce, or jalapeños, shavings of prosciutto, or wilted arugula, to name just a few possible variations on a theme, variations that still might reasonably be considered grilled cheese sandwiches under a somewhat broad interpretation of this term. What this gets at, then, is not only the license that a cook has to alter a recipe, but the normative dimensions of what a group of communicating individuals (a food- and language-sharing community) permits for describing different foods. It is this community that develops custom, which includes not only the practices that are embodied in individual habit, but the norms that govern these habits. And there are certainly limits in this linguistic normative dimension, since (for example) if I decide to substitute a cabbage leaf in the place of bread, say, to reduce the carbohydrates involved, and/or replace the cheese by tofu as a way to reduce the fat content or to make the dish vegan, I could hardly call it a “grilled cheese sandwich” any longer but would now be talking of a grilled tofu lettuce wrap or something similar.

Structuring the space for activity

I get everything together that I will need to make the grilled cheese sandwich. I take two slices of bread from the freezer and set them on a board that I place on my cooktop near the burner that I will use. I take a package of sliced cheese and the dish that holds butter from my refrigerator, and place them nearby as well, along with a knife for spreading the butter. I take out the pan that I will use, and a spatula, and set these on the cooktop. Finally, I make a hardcopy of the recipe, and place it in a recipe holder that I set in a place that is easily visible while cooking (Figure 2).

In Figure 2, a part of the material setting in which the cooking takes place is visible, though it is important to recognize (as easy as it is to take for granted) that the cooking context shades off indefinitely: in a kitchen, in a house, in a residential neighborhood, in the city, region, and country where I live, in early 2023, and outward the situation extends. What this image shows is that the kitchen in general and the cooktop location in particular, are already structured for cooking to take place there. The refrigerator is within reach, there are

drawers just in front and at the sides of the cooktop that hold dishes, pans, kitchen utensils. These spaces are deliberately designed for this activity, a historical and social accomplishment that in its specifics looks quite differently here than it does in other cultural-geographic regions, and other temporal epochs within this same geographic region, even in different kitchens within this very neighborhood. In gathering the ingredients and tools, I do not “think” my actions, at least not noticeably. I am simply absorbed in the reaching and grasping and placing, habit developed from past cooking that I have undertaken over a period of years within this space. The existing structure of entities and their relations within the kitchen are presupposed and relied upon in the actions so far.



Figure 2: Ingredients and tools near cooktop in preparation for cooking (knife is occluded by the left edge of the board on which the ingredients are placed)

In bringing the ingredients and tools into close proximity near the cooktop, I am further structuring this space for the cooking that will soon happen. This arrangement of all materials in advance of cooking “so that everything required is ready to hand and that necessary preparation has been carried out in good time” (Schlegel, 2019, p. 1) is so customary among cooks that it is given a special name: *mise en place*. My use of *mise en place* provides a concrete verification step of the ingredients, going beyond the presupposition of their presence in the house that was made earlier, since now they are actually seen and touched, placed close at hand. That the material environment is now structured in a particular way is not an important fact that has to be committed to memory so that it can be consulted at various times as the activity proceeds. This structuring is materially enacted, altering the space itself in a way that is perceptually available to me as the cooking proceeds. As a result, I need not keep a detailed mental account of where I am in the cooking process, since my spatio-temporal location and physical orientation in front of the cookstove at the start of cooking a grilled cheese sandwich with all of my materials present and at hand signals that I have not yet begun to cook. And the state of these materials at each moment in time plays a similar role throughout the cooking, revealing themselves so that I can see that the flame is on or off, that the bread does or does not have butter on it, the skillet is empty or with a sandwich or half-sandwich in it. Even if interrupted, for instance to take an important phone call, I can return to the cooking task and immediately see just where I left off and what is next to do.

What is visible on the board in Figure 2, and what I indicate in the narrative, is that there are two slices of bread and a package of cheese. The bread, as foreshadowed earlier, is not white bread, but is a whole-grain rye bread obtained from a small store a few miles away. The baker at the store says that they obtain their bread dough in frozen form from Germany and bake it in-house. It is considerably denser than most white breads sold in supermarkets in the U.S., and in my view tastes better than anything else available within several hundred (or more) miles of where I live. This is the only bread that I keep at home, sliced shortly after it is purchased, and stored in the freezer for later use. The cheese package says “Aged sliced swiss cheese” on the side of the package, indicating that it is not purchased as a single chunk, but is sliced prior to packaging to a size that is similar in dimension to the slices of bread. “Swiss cheese” is a kind of cheese that is sold in the

United States, one of about six types that are typically found in supermarkets, though many supermarkets, and particularly those considered to be upscale, have their own cheese department with dozens of imported and artisanal domestic cheeses. But I am not upscale in my cheese tastes when I do eat cheese, so sliced, supermarket cheese suffices. And because I do not eat much cheese, with rare exception I only keep one variety in my home at any time, which I will use for this particular grilled cheese sandwich despite that it differs from the type of cheese in the recipe, which is “Cheddar,” another of the standard varieties available in virtually all US supermarkets.

That a slice of bread is the specific unit that I bring from the freezer and at the same time treat as satisfying the ingredient specification from the recipe attests to my habituated activity within what we might call a “properly sized” food culture. This is a culture in which much of the food encountered in the supermarkets in which I shop, bread and cheese among them, is manufactured within an industrial food system and sold in uniform and customary sizes and shapes. This industrial food system also penetrates into the recipe downloaded from the Internet, which (in the Internet copy but not reproduced above) has an advertising link to “Fred Meyer,” a national supermarket chain, and the address of a Fred Meyer store about one mile from where I live. And the rye bread from which my slices are taken is from a loaf of a customary size and shape similar to what is found in supermarkets, though in purchasing it in loaf form (a violation of custom) I have to slice it myself. Though it is not possible to see from the photograph, the slices of rye bread are about one-half the thickness of customary slices of supermarket bread. As we will see shortly, this alteration of ingredients also requires alteration of the cooking actions.

Busy in the midst of cooking

I turn the burner on under the pan, somewhat low to give myself leisure to butter the bread. I use the knife to cut approximately 4mm of butter, and begin to spread it on one of the pieces of bread. But the butter does not spread well, to the point that small amounts of the bread surface separate from the bread. Pressing harder, and as the butter becomes more pliable with use, I get it spread across the entire surface. But I think it coats the bread too generously. So I lift some of the butter off with the knife and spread it on the other piece of bread, then slice off a bit more butter (1mm or so) to make the rest of this second slice evenly buttered, this thinner amount of butter being easier to spread than the first bit.

I now look at the recipe directions, and realize that in buttering the second slice of bread that I have not followed the specified sequential ordering, though I am certain that this will not have any adverse consequences. The directions say to place the buttered side of one piece into the pan, and I pick up one slice of bread in my right hand. But before I place it into the pan, I realize that the pan may yet not be hot enough. I place my hand just above the pan to feel how much heat is coming off (Figure 3), and don't feel that the pan is hot enough.



Figure 3: Using the hand to test the heat coming off of the pan

I lift up the pan to look at the flame height, then adjust the burner so that the flame is a bit higher. I look intently at the pan to see if there are any heat waves coming off of it. When I think that I see some, I place the bread in the pan, buttered side in contact with the hot surface of the pan. A small chunk of the butter comes off of the bread and drops on the floor, which I notice but do nothing about. The bread makes a satisfying sizzling sound, just the sound that I had anticipated. I pick up the cheese package, and return to the directions, seeing that it directs me to place a slice of cheese on top of the bread in the pan. I do so, and as I suspected, this looks like too little cheese, so I place another cheese slice atop the first (Figure 4).



Figure 4: Bread in pan with 2 slices of cheese on top

This looks right. But now I am concerned that, with the density of the bread and the thickness of the cheese, the bread will burn before the cheese has been sufficiently melted. I turn the burner down a little. And I place my hand just above the cheese to feel how much warmth the top of the cheese is receiving, which doesn't feel hot enough. What I do, with some trepidation, is to take a lid and place it over the pan. The trepidation is because I do not want the bread to get soggy from the steam that will build up under the lid, even as I think this risk is pretty low given the bread's density. The plus side of this steam build-up is that it should melt the cheese. As I reach for the cover in the drawer just below the cooktop, I step into the small piece of butter that had earlier dropped, feeling a bit foolish, and wipe this up with a towel from both shoe and floor to prevent any further butter mishaps (a thought flashes that I should have done this earlier). I grab the correct sized cover, and place it atop the pan (Figure 5).



Figure 5: Cover atop pan

After about 45 seconds, I pull the lid off to see if it is having the desired effect. I see that the cheese is starting to “sweat,” that is, there is moisture on top, and the cheese appears to be softer, which I take to be a good sign. I place the lid back on top. I reread the directions, and locate myself in them. I notice that the directions say to place the second piece of bread atop the slice of cheese just after placing the cheese slice there, but I think this is clearly wrong, at least for my sandwich, since this will insulate the cheese from the heat on top that the lid is supposed to cause. After another 30 seconds, I pull the lid off again, and immediately smell what I suspect is a slight burning of the bread. I lift one corner of the bread enough so that I can see underneath it (Figure 6), and it is a little more done than I would prefer, but not fatally so. And the cheese is nicely melted—I touch it with my finger to see how much “give” there is, and it feels just right. But it is clearly time to flip the bread.



Figure 6: Lifting corner of bread to look underneath

I quickly place the second slice of bread atop the cheese, butter side up, and flip the bread in one smooth, continuous motion. The butter from this second slice makes a loud sizzle, and there is a considerable amount of smoke that immediately arises around the sides of the pan. I turn the burner down considerably. Because the cheese has now melted and both pieces of bread are on the sandwich, there is no need to put the lid back on. I realize that I need to get a small plate to put the sandwich on once its cooking has completed, a plate that I grab from a shelf nearby and place to the right of the cooktop. After a little over a minute, I again lift a corner of the bread to peek underneath. It looks perfect. I remove the sandwich from the pan, place it on the plate, and turn the burner off.

The sandwich as a whole seems a bit too unwieldy to eat, so I cut it in half. I use a serrated knife to minimize the chance of cheese squeezing out the sides. I take a bite, and it is just the esthetic that I had aimed toward: crisped (but not burnt tasting) bread, melted cheese, and a good balance of bread to cheese (Figure 7).



Figure 7: Cross section of finished sandwich

The cooking itself is largely driven by habitual activity in and of the body-mind: hands used to test temperature, to hold the spatula, to flip the bread in one fluent movement practiced over years with everything from eggs to fish to eggplant slices, eyes that gauge the heat level of the pan, the doneness of the bread, the appropriate amount of smoke, a finger that pokes the cheese to see how much resistance it meets, nose that instantly smells the slight burn of the bread, ears that hear the sizzle of butter. What is apparent throughout is that this habitual embodied activity is far from routine, since I have to attune to the sensory particulars: not just looking *at* the pan as a disinterested spectator, but looking *for* the proper temperature, not just listening to the sound of butter but for just the right amount of sizzle. All of these sensory patterns are consequential for the finished product, for moving the ingredients into their artful and final combination for the enjoyment that they promise. For what these sensory patterns do for the person properly habituated (as I am) is to solicit the appropriate response. It is the smoke that provokes the hand to turn down the flame before the mind even knows what has happened, the brownness of the first slice of bread that calls out for flipping it. What might have required a conceptual thought process at an earlier stage of my development as a cook so as to inferentially connect the smoke in the pan to the level of the flame beneath it no longer requires it. As soon as the smoke is perceived, it simply means the flame is too high, directly and without any conceptual thought.

The distinction between some elements of subject-matter as rational and others as sensible is always intermediary and transitive. Its office is to lead in the end to a perceptual experience in which the distinction is overcome—in which what were once conceptions become the inherent meanings of material mediated through sense.” (Dewey, 1980, p. 259)

The incident with the butter dropping and my later stepping in it, my feeling foolish in doing so, seems such a small thing, finished as soon as it starts. But it signifies an affective involvement with this cooking event that is so easily overlooked that it could go without any notice or comment. At the point when it happens, I am annoyed that I have stepped into the butter, fearful of tracking it through my house, a greasy smear that might endure. Not only am I attending to the fire, the bread, the skillet, but I am *tending* them, caring for them, caring about how they are handled and treated. This is my home, my habitation, I have a past and future here, and I share it with another, someone who cares for me and for whom I care. So I am *careful* in all of my dealings in this house, and also with this sandwich that I cook here, a sandwich that will nourish me. I could also say that I *mind* my activities, using this word in the informal sense that Dewey speaks of when he challenges a psychologized sense of “mind” as a purely intellectual affair.

The mother minds the baby; she cares for it with affection. Mind is care in the sense of solicitude, anxiety, as well as active looking after things that need to be tended; we mind our step, our course of action, emotionally as well as thoughtfully. (Dewey, 1980, p. 263)

Even as I am solicitously involved in the events as they are taking place around me, too caught up in looking and feeling and tending to give much *thought* to what I am doing, discursive thought is not absent. In particular, it makes its appearance at just the point where I encounter what is *not* routine, what disturbs the smooth and habituated activity that has so far been evident. For what stops me in my tracks is noticing the thickness of the cheese atop the dense bread. What this triggers is a projection in time, not as a simulation that moves through all gears of a mental clockwork, but an imaginative leap forward that results in an embodied feel for what the finished product will be if things continue on their same course. And what this projection reveals is bread that is burnt and cheese that is not melted. The “grilled cheese sandwich esthetic” permeates my every sensitivity and move, for this esthetic is all about the experience and mouth feel of the crunchy yet non-burnt bread and the soft cheese of the first bite, a consummation of all of the effort that has come before, and what marks the end of this grilled cheese cooking experience. And as I look at the bread in the pan that is not yet burnt and cheese that is not yet under-melted, I do not think through an infinity of possible actions that might mitigate this untoward outcome, a decision-theoretic tree of possibility from which I choose what I think is optimal. Rather, a single candidate solution arises in my consciousness born from years of cooking and solving similar kinds of problems: to place a lid over the entire pan, an action that was the furthest thing from my mind when I started cooking this recipe. This solution I also project forward, and it seems likely that it will be just right. And so I act, guided by this reflective thinking.

And after cooking, when I am experiencing the hoped-for grilled cheese sandwich esthetic, engulfed in the sensory properties of eating that involve all five senses, habit is in process of learning. Because the “workability” of covering the pan with a lid is not something that I can verify simply by mental projection, but has to be done in the world so that I undergo its consequences, however good or bad they happen to be. And because the consequences are good *this time through*, I take note of this. But this is not the only learning that has occurred, for I have been acting and undergoing throughout this entire episode, relying upon habit (for example) to flip the sandwich in the pan. But *this* sandwich in its concrete particulars has never been flipped before, and I have to respond to all of the embodied sensing in order to carry it out. So that when in fact the flipping is brought to successful completion, which it is, habit learns, ever so slightly adjusting and updating. And similarly for all of the dozens if not hundreds of habits brought to bear in this small episode, habits that make the cooking possible, and habits that are made possible by the cooking. And as Dewey remarks, these changes of habit extend far beyond the learning of technical skills, to engulf the entire self that I am, and am becoming.

Whenever anything is undergone in consequence of a doing, the self is modified. The modification extends beyond acquisition of greater facility and skill. Attitudes and interests are built up which embody in themselves some deposit of the meaning of things done and undergone. These funded and retained meanings become a part of the self. They constitute the capital with which the self notes, cares for, attends, and purposes. (Dewey, 1980, p. 264)

The purpose of the ethnography of a person following a recipe is to help retrieve what becomes obscured under a background picture of computer-mind metaphors and the history of Western thought on which they are based. The following set of general properties of instructed action carried out by a human being are likely to be present as they are in the narrative above, whether the instructions pertain to cooking a meal, changing a car’s oil, putting together a couch from its parts, folding an origami shape, and any other similar form of instructed activity. And this is because instruction-following in a variety of domains shares a number of common characteristics that critically depend on a person’s responsively-attuned body-mind engagement in customary social practices. When a person follows instructions, such as those expressed in a recipe, the person orients toward a particular goal, such as the dish that the recipe provides directions for cooking. The person can read the instructions, and in this way anticipate arrival at the goal and foresee whether there are any apparent obstacles to its realization (“am I missing any tools or parts?”). Anticipating the goal as the culmination of the instructions (such as the final origami shape) includes an esthetic sensibility that permeates and guides all activity in the goal’s pursuit. Embodied habit learned from prior experience is the ordinary mode of human action, where reflective thought is engaged when habit is disturbed or confused (for example, when the oil plug is stuck when changing a car’s oil). Such reflective thought can also be invoked when an actor alters the directions in order to better reach their goal, a license to change bounded by normative demands of custom. Within habit there is a non-focal sense of the larger situation in which action is embedded (where the walls are so that I don’t scrape them when setting up a new couch that I just purchased), a situation that is different in its particulars in every instance of following the instructions (your living room as opposed to mine). There is also focal attunement to patterned perceptual solicitations from the environment (I quickly tap the oil pan with my bare hand to make sure that I won’t be burned when I remove its plug) that allows a person to locate themselves within the instructions and respond appropriately to these solicitations. Such attuned responses are not simply intellectual, but careful and caring (I make sure to carefully place the container for used oil so that I don’t inadvertently knock it over). By acting in the world and undergoing the consequences of this action, the actor’s habits become more acutely responsive and skilled, and the self is refashioned (as a more competent cook, origami folder, oil changer). Verifying these properties can be done by any reader, by following instructions for virtually any activity as I have done in cooking via a recipe and noting the way in which activity unfolds.

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