The role of context in disambiguating -er nominalizations

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Introduction  In this paper we study the role of context in disambiguating the readings of deverbal -er nominalizations. It is well-known that -er nominalizations can have a number of readings (Rappaport Hovav & Levin, 1992; Lieber, 2004; Lieber & Andreou, 2018). The data below demonstrate the readings relevant for this paper. (1) exhibits an Agent nominalization, (2) shows an Instrument nominalization, and (3) shows a Patient nominalization. Patient nominalizations have been claimed to be absent or non-productive, and so (3) is of particular interest to us.

(1) That guide was a proper, very in depth, training guide on how to fry food, so rather than having a de-skilled work force, they have very well trained fryers to fry their food... (Google)

(2) For a machine as elaborate and well-thought-out as this fryer, the thermometer was a disappointment. (COCA)

(3) What a wonderful fresh chicken!! [...] I think he looks great and will be a delicious fryer. (Google)

Our goal is to examine how context guides interpretation of the nominalization. Using Frame Semantics (Petersen, 2007; Löbner, 2014; Kallmeyer & Osswald, 2014) to formalize contextual information and the lexical semantics of the lexical items involved, we show how context fixes reference along two dimensions: conceptual properties of the referent (e.g., whether it denotes food or an animal) and the semantic role of the referent (Agent, Instrument, and Patient). Before we turn to the role of context, we present the frames for fry and chicken, which are needed for our analysis.

Change of state verbs  Change of state verbs such as fry allow for Agent, Patient, and Instrument -er nominalizations. Figure 1 gives the frame for fry, which has a bipartite structure comprised of a CAUSE and an EFFECT. Fry causes its Patient argument to have a cooked state at the end of the event.

Arguments come with certain requirements: Agents must be animate and volitional, while Patients must be non-volitional. Instruments must be non-animate. The direct object of fry can refer to either raw material (e.g., raw meat) or the product (cooked food).
Abstracts

We model nominalization as a shift of the referential node of the frame (Kawaletz & Plag, 2015). Thus, Agent, Instrument, and Patient nominalizations are treated as a shift of the referential node to the values of the $\text{AGENT}$, $\text{INSTRUMENT}$, or $\text{PATIENT}$ attributes.

**Food and the chicken frame**  *Chicken* denotes a multilevel frame structure (see Figure 2), extending Anderson & Löbner (to appear). Animal frames include reference to concrete, physical objects representing the animal and its flesh; $\text{ANIMAL}$ and $\text{MEAT}$ attributes map between these levels. Food (for humans) is an abstract concept; what is considered food depends on conditions such as personal preferences and socio-cultural norms regarding what counts as edible in which circumstances. Therefore, food is a candidate for an object at the social level of the ontology. Social objects must be grounded by physical objects, and are generated via humans considering one object to count as another in certain circumstances (Anderson & Löbner, to appear; Searle, 1995). An attribute $\text{FOOD}$, generalized from Anderson & Löbner’s $\text{C-CONST}$, encodes these notions.

We turn next to showing how context interacts with these frames in producing the nominalizations.

**-er and context**  Context guides the nominalization towards a particular interpretation by contributing restrictions through the selectional properties of modifiers and predicates; the Agent, Patient, and Instrument readings in (1) arise naturally from these restrictions.
**Agent** In (1), the adjective well-trained requires an animate entity. Thus, the referent of fryer must be fixed as either the Agent (animate), or a possible animate Patient. World knowledge (e.g., knowledge of the food and cooking frames) includes knowledge that humans are not typically fried. Context further specifies the interpretation of the -er nominal by reference to a (necessarily human) work force, thus ruling out a Patient interpretation and being consistent with an Agent interpretation.

**Instrument** Fryer is interpreted as a machine in (2), based on the surrounding syntactic context. The type hierarchy specifies machines as being non-animate, and hence unsuitable as Agents. Additionally, the FOOD attribute is not compatible with machines, since no part of a machine is typically considered food. Therefore, only Instrument is compatible with the information supplied.

**Patient** Context serves two functions in (3): It makes accessible the CHICKEN frame, which allows reference to both animal and food. Then, fresh and delicious guide the interpretation to the food level of the frame (given Figure 2). The Patient reading is most natural due to reference to food.

Additionally, even though it’s often claimed Patient readings with -er nominalizations are unproductive, we nevertheless find shifts to both Patients in both initial and result states, uncooked versus cooked meat. (3) shows reference to the result, while (4) shows reference to the uncooked initial state.

(4)  [...] Step 7 Birds are processed as whole fryers or roasters or are cut into pieces ...

**Conclusion** We show how context interacts with the frames for fry and chicken in order to produce either an Agent, Instrument, or Patient nominalization, and reference to humans, machines, animals, or meat. Our analysis extends readily to other examples such as griller and roaster. These case studies give us insight into the compositional processes involved in determining the space of interpretations of -er nominals in context.


