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Discussing frame semantics:
The state of the art

An interview with Charles J. Fillmore

József Andor
University of Pécs

J.A.: Thank you, Chuck, very much for accepting my invitation for this interview. I would like to center it around the notion of *frame*, a conceptually valid notion of interdisciplinary relevance, as pointed out by all of the speakers, including ourselves, of an important international colloquium that took place at the oldest university of the Old World, in Bologna in 2005 (Rossini Favretti, 2008). As a sort of father of research elaborating on the conceptual as well as the linguistic relevance, the status of the notion of frames, you were invited to that interdisciplinary conference by its organizers with the aim to give the keynote speech, based on your work devoted to outlining the linguistic theory of frames and also to investigating their role in linguistic representation (Fillmore, 2008). You have been working on frame-based linguistic analysis, frame semantics for several decades now. In a book written on the frame-based presentation of political issues and standards, your devoted colleague at Berkeley, George Lakoff, called you the Father of Frame Semantics (2004, p. 121). Now, George's approach to frames is — perhaps one may say — considerably, radically different from yours. His notion is very much embedded in the cognitive aspects: philosophy, cognitive science, and even neuroscience, and, of course, linguistics are the principal fields involved. All these aspects originate, most characteristically, from the socio-cognitive-based frame theory of the late Erving Goffman (1974). No doubt, your approach took a different direction of development: at the start, in the late 60s and early 70s, you were researching the frame notions in terms of your model of case grammar, and later, in the late 70s and early 80s, you elaborated on the early, but now standard, however primarily purely linguistically-based theory of frame semantics.

Where would you draw the borderlines between the Lakovian approach and your own, linguistically (primarily syntacto-semantically based) model? How can *frames* be characterized, perhaps even defined, in your current view? To what

extent do you think that they are linguistically based, and how much are they cognitively based, cognitively relevant?

C.J.F.: Well, as you know, in my own history the frame concept started from the *case frame* idea in Case Grammar, where I was trying to classify verbs according to the types of events or situations they conveyed, in terms of assemblies of independently described role notions called *cases*. Verbs that expressed, say, 'caused motion' selected (or were selected by) a cluster of cases that included an agent, a moveable thing (theme?), and any or all of the roles that define linear motion: a sentence like *We pushed the cart through the corridor into the library* had places for the agent, the theme, the path, and the goal, where all but the subject and object were marked by prepositions (Fillmore, 1968).

At some point it occurred to me that I should give up trying to define situations as assemblies of roles — where I constantly had to worry about expanding or justifying a fixed list of roles as new facts came up — and to invert that by describing situation types in their own right (calling these the *frames*) and identifying the *roles* relatively to the *frames*. The situation types, then, were the frames, and roles could be identified with reference to their frames. If the roles found in one frame seemed to have a lot in common with roles found in some other frame, we could handle that by assuming inheritance relations between *small frames* and *big frames*.

Although my original purpose in Case Grammar was to characterize what I thought of as a really deep 'deep structure' for the basic underlying grammatical organization of sentences, the later work was more or less devoted to lexical studies. For this I distinguished *cognitive frames* from *linguistic frames*, the idea being that cognitive frames are those background understandings needed for making sense of things that happen around us, and linguistic frames are those that are specifically coded in — or "evoked by" — lexical units or other features of linguistic form. I talked about this distinction by saying that when humans face particular situations, they can "invoke" frames (from their personal *mental framicon* — I just made that up, adapted from 'mental lexicon') to help them make sense of those situations, but the words we encounter can "evoke" frames by virtue of their conventional association with them.

George Lakoff emphasizes the frames that humans have by possessing human bodies, frames that are available for metaphoring, as well as the frames that humans acquire by living in a culture, frames that have different weightings or salience in their individual framicons, allowing two people to have different interpretations of their experiences — or perhaps it would be more faithful to George's point of view to say that they have different experiences because of tendencies to frame experiences in different ways (Lakoff, 2008). I think we more or less agree

on what frames are about and what roles they play in language, though my actual work has concentrated on how lexical units and grammatical constructions evoke frames and how the grammar tells us how the information structured by a frame gets realized in the grammar.

J.A.: You named your principally linguistically-based, but cognitively relevant approach to studying frames *frame semantics* quite a while ago (Fillmore, 1977a). Most of your recent research has been centered around lexicalism: studying the lexis of frames, identifying, describing, and interpreting lexical constructions. All these topics certainly, strictly fall within the domain of (cognitively, conceptually based) semantics. However, utilizing this type of lexical research for studying larger linguistic units and structures, in particular, text and discourse, evaluating their cohesive nature and coherence, aspects of other, cognitively-based but also pragmatically coded issues, such as saliency criteria, factors of prototypicality, keyword status, conceptual blending, lexical choice within certain near synonymic domains, perspectivization, and others, are manifested as deeply embedded in lexicalism. In my view, these frame-related issues are perhaps even more closely related to linguistic pragmatics than to semantics. Why not then call the field studying them *frame pragmatics* rather than *frame semantics*? Where, do you think, can the borderlines between frame-based semantics and frame-based pragmatics be drawn? In a way, this issue reminds me of the currently topical separation of *lexical semantics* from the domain of *lexical pragmatics*.

C.J.F.: I thought you were going to ask easy questions! For me *semantics* proper is a study of the relation between matters of *linguistic form* and a community's *conventions* that shape native speakers' interpretations of uses of such form. If we could assume that everybody who speaks a given language shared exactly the same conventions, then we could say that the semantic description of a sentence or text represents what language users can find in the text solely on the basis of their knowledge of the language, without their needing to bring other conditions into the process. Since in many cases those conventions themselves are linked to aspects of the communication setting, the interactants' shared experiences, their mutually assumed intentions, and the like, such representations necessarily impinge on issues of pragmatics. I think there is no semantics that is completely free of pragmatics, but there may be a pragmatics that is free of *specific* reference to linguistic forms.

The word pragmatics is more than a little equivocal, too. Some use it to refer to bringing into a sentence's interpretation everything that might be knowable about "the world" — including, of course, the world of beliefs, myths, and stereotypes. I prefer to limit pragmatics to systematic aspects of the relation between communication acts and what people are "doing to each other" in the process. I have spoken

of *frames* as providing the conceptual structures underlying the meanings of linguistic entities, while recognizing that the concept itself is not limited to an understanding of language. If we limit outselves to the interpretation process, we can go back to the distinction I suggested between linguistic forms *evoking* frames (the form itself has a conventional association with the frame), versus people *invoking* frames as a way of making sense of their experiences (Fillmore, 2003). Pragmatics of the kind that is not tied to linguistic form as such can be said to involve this invoking process, even when the input experience is a linguistic utterance. I have often used the following contrast: If I see someone in profile and I notice that her left eye is green, I will instantly assume that she has green eyes, based on my knowledge of the nature of eye coloring in the vast majority of human beings. But if you say to me, *Jane's left eye is green* — apparently giving me in linguistic form exactly the same information I received perceptually in the former setting — I am likely *not* to make that assumption, invoking instead some communication frame involving relevance or conversational cooperation that helps me work out why you would give me such a specific piece of information when it would be so natural to say that she has green eyes. In this case Jane's other eye must be brown! (You might be referring to the actress Jane Seymour.) In short, there is nothing about the actual linguistic form of the description of Jane's left eye that is capable of evoking the *heterochromia* frame.

You have given a long list of concepts and phenomena that I have not worked on, but I'd like to think that a number of conceptual tools that I work with are likely to be relevant to those questions. These tools include:

1. the concept of *lexical unit* that includes not only individual lexical items but phrasal units whose properties are not explained by their components;
2. the association of a lexical unit with the frame(s) that it evokes, which would include indirectly information about its contrasts with its frame partners;
3. the requirement that the description of lexical units needs to include not only information about their dependents (valence features) but also, where relevant, information about their governing context (e.g., polarity preferences) or their preferred syntagmatic companions (collocates);
4. a broad view of *grammatical constructions*, lexico-syntactic patterns that convey meanings of their own, and participate in particular ways in shaping the meanings of the lexical material they contain; this includes "unary" constructions (a.k.a. "lexical rules"), in which both the input and the output is a lexical item;
5. and *etymology* as an explanatory principle for the irregularities.

By this last point I mean that there are *patterns of coining* (Paul Kay, 2002) that anybody can use at any time, for creatively indicating one's intention in a given

context (Karl Zimmer and Pamela Downing have discussed the variety of process-es, as have the London "lexical pragmatics" team (Wilson & Carston, 2007)); if the new creation catches on, it can become part of the community's conventions, and, however patterned its relation to the original meaning might be, the explanation for its existence in the present language is a matter of diachrony.

One of the things one learns in trying to practise lexicography using corpus evidence (here I refer to my work on the FrameNet project) is that the obligation to account for everything one finds is unrealistic. There has to be a division of labor, and for this I turn to Patrick Hanks's distinction between *norms* and *exploitation of norms* (Hanks, 2007). The lexicographer's job is to discover and describe the norms; other people — or lexicographers in other roles — can explain the nature of the exploitations.

There is also an important division of labor at the level of sentence description. A *construction grammar* account of a sentence can provide a recipe for building an interpretation of the text that contains the sentence, but the job of filling in the details — of providing the ingredients — is the language user's. And the job of explaining that process is the job of possibly large teams of specialists.

For example, if you hear me say *Otherwise, my proposal is quite similar*, you have to know who I am, you have to have been paying attention to the preced-ing discourse in which somebody, possibly me, has described the ways in which the thing called *my proposal* is distinct from some other proposal, and that other proposal — which is the missing argument in the adjective *similar* (similar to X) — has to be a part of our shared knowledge at that moment. The adjective *similar* has another unexpressed valent: the parameters by which my proposal is similar to that other one, and you might suspect that that's what I'm going to talk about next.

To the extent that the "purely linguistic" part of an utterance includes lexicon, grammar, and conventional features of speech prosody, such descriptions should be capable of providing the material for the follow-up team of researchers to do their work. Unfortunately, that's nothing I've had any experience with.

J.A.: My next question concerns the relation of three major types of conceptual structure that you yourself, your students, co-workers, or other people work-ing on cognitive-based theories of linguistic analysis have used: *scenes*, *frames*, and then *scripts*. How would you outline or interpret the nature of their related-ness? The relation between frames and scripts, I believe, seems to be clearer and has been discussed amply in the relevant linguistics, cognitive-science-based, or cognitive psychological literature (see, for instance, Andor, 1985). But the rela-tion between frames and scenes, frame-based versus scenic knowledge has not been clarified with adequate precision. You yourself seem to dislike talking about the relation between frames and scenes, and about their underlying knowledge

structures nowadays. 'Frames', and the whole theory of frame semantics have been formulated and described more extensively (but still not unambiguously, I should say), whereas the notion of 'scenes' and scenic knowledge have become sort of a neglected brother. On the other hand, 'scene' is used by FrameNet researchers in contexts such as "these words frame the following scene", to quote Petruck, for instance. She states that "different words assume different perspectives on the schematization of the same scene". Concerning frames, she states that "word meaning is characterized in terms of experience-based schematizations of the speaker's world" (Petruck, 1996, p. 3). I see quite a bit of overlap, heterogeneity in defining and outlining the scope of the major types of conceptual structure.

C.J.F.: Well, I think you know that I quickly repented having introduced that terminological confusion. A Schankian *script* could be seen as a variety of frame (Schank & Abelson, 1977), and to the extent that, say, the Restaurant Script is something that is understood by anyone who understands the word *restaurant*, it is a semantic entity of some sort. That too is misleading, come to think of it. We might want to say that the restaurant frame itself involves a business where meals are served and consumed on the premises. Paying for the services is a part of its being a business; having separate roles for the people who cook and serve the food can be thought of as an arrangement separate from the basic notion of the frame; having separate courses, including dessert, is a part of how we understand meal; and notions like printed menus, tipping, and the like, are concepts that, as we say, "use" the restaurant frame, but are not necessarily a part of it.

However, if I wanted to use the word *scene* nowadays — used as informally as, say, *situation* or *state of affairs* — I would use it to describe different ways of giving a linguistic account of some present or imagined situation. Some of us at FrameNet have spent a certain amount of time looking at parallel texts to see if the same frames are used in what is presented as translationally equivalent passages. In particular, we have looked at translations of Chapter 14 of the Sherlock Holmes story *Hound of the Baskervilles*. In understanding the events in this narrative we could recognize a type of situation and then notice how the original author and the translators might have differed in how they assembled frames to create a structure that matched the situation. We couldn't always show this as a matter of using the same (cross-linguistically valid) frames. Where one version might say *We were standing behind a large rock*, another version might say *A large rock concealed us from view*. The choice of the word *behind* places us on the other side of a rock from some vantage point, from which we know that we could not be seen (we know that rocks are not transparent); the verb *conceal* presents that fact directly, in a transitive phrasing. These are obviously not the same as different perspectives on a single larger frame of Vision, say; but in much of our work we talk about closely

related frames being perspectives on a "mother" frame. For example, we want to say that there's an abstract frame of commercial transaction, the details of which are understood from the various verbs that take perspectives on that frame: *buying* takes the perspective of the buyer acquiring the goods; *paying* takes the perspective of the buyer surrendering the money; and so on with *selling*, etc. Again, a number of other words can be said to "use" the commercial event frame, by being defined in terms of it (rather than being a part of it), such as distinctions between *credit* and *cash*, *tender* and *change*, and the like.

I guess we could say that the whole notion that George Lakoff has made popular of "framing" situations can be thought of as taking different views (as supported by the semantics of the words we use) on a single situation. In some cases that larger situation is itself codable linguistically, and in many other cases it is not. An early example of mine is the contrast between *thrifty* and *stingy* as describing a person's hesitation to spend money (Fillmore, 1982, 1985, p. 243). These are not antonyms within a single frame, but evaluations belonging to different frames.

Mark Gawron has given, in lecture, a nice example of the language used in different countries for talking about what you do when you physically modify a bus ticket to show that it is being used for the current journey: in some cases it is said that you *validate* the ticket (so that it's evidence that you're a legal passenger on this bus at this time), and in other cases it's said that you *devalidate* it (making it clear that you can't use it again later on). Under either description, the ticket is valid for this ride but not for later use.

J.A.: Now, I would like to ask you a couple of theoretical as well as methodological questions about the internal structure of frames (of conception) as outlined in/by FrameNet. According to its manual, a lexical entry serving as a 'head' identifies and even structures frames. What does it mean to have a head-status in frames? How many heads can frames potentially possess? Can lexical dependents of frames simultaneously serve as dependents in other (perhaps topically related) frames or those linked via inheritance? What is the relation between what you identify as 'heads of frames' and 'core frame elements', that is, as you put it, the conceptually necessary participants of the frame? By asking all this, I am simultaneously also asking you about the potential hierarchical makeup of frame structures.

C.J.F.: If a lexical *head* of a phrase or sentence is the main thing that "evokes" a given frame, then we can usually expect the *dependents* of that head to be potential expressions of the *frame elements* of that frame. There are also cases where the *semantic* head of an expression is a syntactic dependent: this is the case when a semantically "thick" noun occurs with a light or supporting verb or preposition, as in *give advice*, *take a bath*, *make a statement*, *say a prayer*, *have a fight*, etc., or *in danger*, *under arrest*, *at risk* and the like. Support verbs can have syntactic

arguments of their own that are treated as semantically dependent elements with respect to the noun's frame; support prepositions combine with their frame-bearing objects to create expressions with adjectival or adverbial function.

A lexical unit evokes a frame, by which I mean that to understand the lexical unit you have to know the nature of the frame and its conceptual parts. In some cases the lexical unit stands for a predicate or relation, or whatever, on which phrases that represent frame elements are dependent, but in some cases the lexical unit (or the phrase that it syntactically heads) also stands for a frame element. This is especially true of role-designating nouns: a noun like *guard* evokes a frame of someone guarding some object or place and at the same time it stands for an individual that holds such a role; a noun like *change* (as in *Keep the change!*) evokes a situation in which, say, I give you more money than the thing you're selling me costs and you give me some money back: the word requires an understanding of that little "story" and at the same time it stands for the money that you give me back. If it occurs in a sentence like *give someone change* it's like a support construction, but if it occurs in *Be sure to count your change!* it refers to the handful of money.

The *frame elements* (or FEs) of a frame are the entities, processes, or whatever, that can or must be elements of the kind of situation identified as a frame. If we think about Revenge (the name of one of our frames) we have to have in mind (1) someone who did something that harmed or injured someone else, let's call him the Offender; (2) someone who was injured by the Offender, the Injured party; (3) the Offense that was committed by the Offender; (4) a person who acts against the Offender by way of punishment, the Avenger; and (5) the Punishment, i.e., the avenging act of the Avenger against the Offender. The Avenger can of course be the same as the Injured party. Revenge is more specific than simple punishment for wrongdoing, because in the case of Revenge the punishing act is not thought of as part of any judicial or other institutional process. The words that evoke this frame include simple verbs like *avenge*, *revenge*, *retaliate*; phrasal verbs like *pay back;* phrasal verbs with preposition-selections like *get even (with)*, *get back (at)*; support phrases like *take revenge*, *wreak vengeance* and *exact retribution*; nouns like *vengeance*, *retribution*, *revenge*; and several more. Not all of these lexical units require mention of all of the *core* FEs of the Revenge frame, but in each case each of them is a conceptually necessary component of what's going on. Sentences built around Revenge-evoking lexical units can also contain pieces of information that are not directly related to this particular kind of situation, what Tesnière called the "circumstantials", things like expression of time, place, and manner. All completed acts of revenge have to occur in a place and at a time, and in some manner and with some feelings or purposes on the part of the participants, etc., but we refer to these as *peripheral*. We have a set of criteria for deciding between the two, but of

course there are a few problems with such criteria. FEs that have to be mentioned belong to the core, of course; FEs that can get expressed as nuclear syntactic constituents (subject and object in particular) are also core; FEs that are understood as contextually given if they are unexpressed (in terms of a kind of zero anaphora) are also core; and FEs that are "marked" in grammatical ways (e.g., with prepositions selected by frame-evoking words). Peripheral FEs, on the other hand, have form-meaning pairings that are independent of the frames they accompany.

This *core* vs. *periphery* distinction is not the same as a distinction between being *obligatory* vs. *optional*. In general the peripheral elements are all optional, but there are many situations in which the concepts we think of as core don't have to be expressed in a given context. An important part of our work, in fact, has to do with describing *licensed ommissions of core entities*. Sometimes the grammar of a language allows (or requires) the omission of some FE: imperative sentences omit the subjects, and these can of course stand for the agentive element (speaker, mover, actor, buyer, seller, whatever) in a frame. Some verbs allow FEs to be omitted under a simple "existential" interpretation: if someone is said to be *eating*, we know that there has to be something that is being eaten, but the speaker had no need to be informative about that. Words with particular kinds of meanings often allow an FE to be unmentioned if it is contextually "given" — it has an "anaphoric" interpretation: if you hear somebody say that something is *quite similar*, without saying what it is similar to, you know that the participants in that conversation already have that thing in mind. In short we distinguish several kinds of "null" FEs: *constructional*, *existential* ("indefinite"), *anaphoric* ("definite"), and, in a not fully satisfying way, *generic* (or "free").

Now when you ask about a hierarchy of frame structures, I take it you're referring to the way in which words evoking different frames can be integrated or articulated into a semantic whole of some sort for a given phrase or sentence. If everything worked as neatly as we would like, then an ideal *dependency* representation of simple sentences could have the frame-evoking words attached to the nodes, and the frame elements (i.e., the semantic roles needed for the evoked frames) represented by the branches. In that way we can see one frame serving to inform part of the semantics of a component of another frame. It's more or less the same thing that would be represented by any hierarchical representation of sentence semantics: if *you reported that I intend to insult the governor*, then the content of your *report* involves *intending*, the content of my *intending* involves *insulting* someone, and the mentioned object of my insult is the *governor*, who of course has to be the governor *of* something that has not been expressed.

There's another sense of hierarchy among the frames *within the system*, rather than frame instances within individual sentences. The noun *change*, meaning returned money in a purchasing situation, is in a (still undescribed) frame related

to a family of Commerce frames; the Revenge frame is related to a Reward-and-Punishment frame, and all of these are connected by inheritance or other relations to more abstract frames involving actions and intentions. I won't be disappointed if you ask me about that at some point — if I'm allowed such a hint.

J.A.: You and your co-workers in FrameNet have already identified a large number of frames and described their lexical makeup and structure. How many more do you think can be identified? What would be the potentially maximal number of frames?

C.J.F.: Boy do I wish I could answer that question! I suspect we'll need a few thousand for the *general* vocabulary, but every time I look at efforts to include *technical* vocabulary, I'm convinced that it will never end. You may have seen Thomas Schmidt's Kicktionary on the FrameNet website, which looks at the language of football. Andy Dolbey is finishing up a study of a small part of the vocabulary of protein transfer inside a cell, and if that kind of work were to move on to all of the language of cell biology, it could go on forever. I suppose a reasonable "finished" FrameNet could be a model for exploring the vocabulary of specialist areas, by showing how each area's lexical units provide the means of introducing related concepts (through their syntactic/semantic valence). I have some acquaintances who are working on the frame-based analysis of the language of law; and I've tried to do a little on the technical vocabulary of linguistics.

One thing that might make approaches to technical language easier is that many of the meanings and use conditions of technical terms are *stipulated*, making it unnecessary for researchers to do subtle corpus analysis to figure out what they mean. I wouldn't dare take on the language of aesthetic judgment: if I hear someone describe a sample of wine as *deceptively unpretentious* I have to admit that I have no conceptual tools for figuring out what that might mean. (I made that up.)

I have some hopes for a carefully designed FrameNet for the general vocabulary that could be linked to vast ontologies for connecting with the concepts of insect behavior, hydrology, navigation, psychoanalysis, number theory, and all of what people are prepared to think about and talk about, but I suspect that the place where FrameNet should be "closed off" and that other stuff gets plugged in can't be determined in any rational way.

There might in the end emerge some principles for deciding when a frame-based lexicon is *useful*, without worrying about whether it is finished or correct. Ultimately, of course, we have to recognize individual differences, regional differences, and changes across time. Conversations and correspondence with friends who are British, or (worse) who are young, frequently make me aware that "my meanings" are not always everybody else's. I can imagine a FrameNet that can be adapted to serve advanced language learners, or that can provide a good start

for lexicographers, or that can serve computational applications of sophisticated search, question answering, opinion recognition, and I'm not sure what else.

J.A.: The amount of frames you have identified and characterized as well as described in FrameNet is really vast. However, concerning their possible relatedness to one another (in discourse, for instance), I can certainly recognize degrees of difference in the depth of abstraction of their representation of world knowledge and lexical semantic as well as lexical pragmatic factors. Some frames are based on situational or action typology and include a considerable degree of encyclopedically based knowledge and related lexical properties (such as the now so well known characterization of the Commercial transaction frame), whereas others, such as the Revenge frame, the Murder frame are much more specific in their content. Yet others, such as the Purpose or the Motion frame, but even frames like Communicate are much broader, one could also say, overgeneralized, in their scope. Clearly, these frames with differences in the level of abstraction of their representation are interrelated in various ways. *Frames* are made up of various types of *subframes* under their conceptual dominance at a — let us say — micro-level, but they may serve as, they may function as constituents of higher units: *macro frames* or *proto-frames*, or *super-frames* (see the footnote on p. 13. of *FrameNet II* (Ruppenhofer et al., 2006). How can one empirically draw the borderlines of such multiple levels, hierarchies of representation? How can one reliably describe and interpret the possible shifts, transitions of frame-based lexical information (or semantic leaps, conceptual blending, as they are sometimes called), and also recognize the inter-relatedness, togetherness of frame-based constituents, frame elements, especially, when — being a member of a team of researhers working on building a database of frames — one has to identify the lexically based constituents of frames with a high degree of coherence and cohesion? I guess that notions such as 'inheritance', 'relative salience', 'coreness of frame elements' as circumscribed in FrameNet all have a critical role in explaining such types of relatedness of frame-based content.

C.J.F.: For some of these questions the FrameNet team have been trying to develop a picture of the system of relationships among the frames, including frame-element to frame-element relations. The frames associated with criminal procedures, for example, will require the tracking of individual role-bearers in cases where a single individual goes through the whole process: in the history of a completed criminal procedure, the person arrested in the Arrest frame becomes the defendant in the Arraignment hearing, and then the defendant in the Trial, and maybe, in the end, the prisoner in a Punishment frame. Such frame-to-frame bindings have not been established in a straightforward way in FrameNet, and certainly not in the annotations, but the material is there that could support that kind of analysis. You mention the Revenge frame: in a discourse we may read that where

Jones insulted Smith, and the next sentence speaks of Smith avenging the insult, the person who understands the discourse realizes that Jones in the insult scene is the Offender in the Revenge scene, and the insult stands for the Offense. Again, since FrameNet has been working mainly on single sentences and has done nothing (yet) on connections within whole texts, the FrameNet database has nothing direct to offer. Work on pronoun resolution and other kinds of anaphoric connections within continuous text could have the effect of producing these connections, but our work has northing directly to say about it: it's a matter of division of labor.

In the case of Commercial Transaction, the frame-to-frame relationships have been quite carefully worked out, in my opinion. The *Frame Grapher*, available on the FrameNet Data page on the website (http://framenet.icsi.berkeley.edu/Frame-Grapher/grapher.php), allows you to see (by choosing Commercial Transaction in the list of frames and showing all connections) most of the kinds of relations that anyone could want to recognize. You'll have to open a little panel called "View Legend" to interpret the colors and kinds of arrows that connect frame names to each other. Unfortunately, it's not helpful for colorblind users. For example, we can see that Commercial Transaction as a whole "inherits" the properties of Reciprocal Action (Jones does something to Smith, and Smith does something like that to Jones); that Money Transfer and Goods Transfer are the two SubFrames of Commercial Transaction (these two things have to be co-present, not necessarily simultaneously, in order for a Commercial Transaction to be completed); that Money Transfer and Goods Transfer each have an Inheritance Relation with a more abstract Transfer frame (moving a thing from one place-or-person to another); that Transfer participates in temporal sequences involving the separate location of the thing transferred before and after the act of Transferring; and that Buying and Selling are different Perspectives on the Goods-Transfer, and that Paying and Charging are different Perspectives on the Money-Transfer. *Perspective-taking* frames in a family of frames that involves more than one individual or entity make it possible to recognize the actions or movements of certain participants as foregrounded, the actions or movements of other participants being a part of the presupposed background.

By clicking on the arrowheads in these diagrams you can get a display of the bindings between the role concepts in the individual frames as well. FrameNet provides these links, and there are researchers who are using them for various kinds of research, especially in the area of paraphrase recognition or paraphrase generation. I myself don't know how successful that research has been, but that's the goal, anyway.

I know, it's probably not fair to answer a question by just pointing you to a website that has a hard-to-interpret display that's claimed to contain the answer. So I should at least recognize that these are real problems, and we're trying to solve them. I should probably say something about the connection with the "cases" of

case grammar: at a meeting with NLP researchers some years ago we presented the vast number of frame roles developed in our database, and some of the visitors pleaded, "Give us our cases back!". The perspectival frames are the ones that most closely reflect the simplest structures of action, change, motion, causation, experience, etc., that underlay the concepts of agent, patient, theme, instrument, experience, etc., that informed the early work; these, in fact, are the frames that are most predictive of the grammatical form of predications. What I mean is that, while it's not possible to ask meaningful questions about subjects, objects, prepositional marking, etc., of the high-level frames of transfer or commerce, such questions do make sense for frames of buying and selling, working and employing, teaching and learning, pleasing and liking, and the like.

J.A.: My next question concerns the relation between *semantic* (or *lexical*) *fields* and *frames*. These closely related notions appeared as key terms in different periods of the development of semantic theory: 'semantic' fields appeared first, based on Trier's work (1931) and later, based on Adrienne Lehrer's important work (1974), (but see also Grandy, 1992), and then 'frames' were researched, relying on your work on case grammar and your later work in lexical (and then, frame) semantics, but also based on the work of a few doing research in artificial intelligence, cognitive psychology, sociology, in the 80s and 90s of the last century.

How are these two, conceptually relevant and linguistically coded notions interrelated? What status would so-called *frame elements* have in semantic or lexical fields? I would particularly be interested to know your view on the status of near synonyms and antonyms, organized under the dominance of particular semantic (or lexical) fields, as frame elements in FrameNet. Would you agree to say that whereas near synonyms belong together (more or less distantly related to one another, sometimes under the dominance of a prototypical member in a particular set) in constituting some aspect of a given semantic field, the criteria of their particular usage (for instance, their possible interchangeability under conditions of discourse-based cohesion) may be different in, may be influenced by their status in particular frames? For instance, *cut*, *prune*, and *trim*, belong together as members of the lexical field of 'verbs of cutting', but *prune* and *trim* belong to, and therefore are used in different frames. However, the verb *cut* can serve as a substitute both for *prune* and *trim*, as it serves as the prototype, the central member in the lexical field of 'verbs of cutting'. We have to note, of course, that not every semantic or lexical field has a prototype.

C.J.F.: I think of field theory semantics as a kind of extension *from* the familiar 'closed categories' of a grammar (like tenses, case, aspect, number, etc.), *to* other areas of the lexicon. The intuition is that each of such categories can only be understood by knowing what it is "in contrast" with, by knowing what other categories

are competing with it. To borrow from Trier's example of evaluations of school-work, if I tell you that your performance is *very good* you might be disappointed to know that there are two higher evaluations I might have chosen, *outstanding* and *excellent*. Similarly, if you're pleased with yourself for having booked into a *first class* hotel, you might be embarrassed to find out that the travel industry has several higher categories, among them *luxury*. But these, like military titles, are artificially created lexical fields, not "natural" ones. I'm not even sure that the intuition in question works well with the grammatical closed categories, if we can accept that there is no unitary "meaning" of present tense in English that stands in contrast to a unitary meaning of the preterit: there are many uses of each of these, and they have to be studied by themselves. There are Gricean explanations for what gets communicated by the choice of one word rather than other nearby words, to be sure, but I'm not convinced that the contrasting terms all join to form the kind of "mosaic" that early field theorists were looking for. Just as there are explanations for why speakers express some notion using one frame rather than another, switching frames rather than switching categories in a frame, and probably nobody would think of frames themselves as in paradigmatic opposition to each other, in ways to be explained by the structure of the language.

It still may be true that when a new word enters a particular semantic field — here I'm using the word 'field' informally — some of the others might have to give up some of their territory, but the idea that words are understood by recognizing their fit in a tight network doesn't take us very far, in my opinion. I somewhere mentioned the fact that in English we use *hypotenuse* for the longest side of a right angle triangle, but we have no lexicalized way of talking about "the other two sides": German has *Katheten* to name them, and other languages have cognates. I don't think the 'hypotenuse' concept is any different for speakers of English and German (Fillmore, 1985, p. 228).

You discuss *cut*, *prune* and *trim*. So far FrameNet hasn't dealt with these, though one or two uses of *cut* have been included. There is a Cutting frame that has to do with using a cutting action to reduce something to pieces, but the verb *cut* itself has not yet been treated in that frame, probably because it is difficult to do a corpus search that would efficiently sort its meanings. (John Searle has made a fuss about the numerous uses of this verb (1980, p. 221–226), and so FrameNet annotators have steered clear of it!) But while a main use of *cut* and nonmetaphorical uses of *prune* and *trim* all involve actions where bladed tools interact in the intended way with physical objects, the valence patterns of the latter two differ from those of *cut*. *Prune* and *trim* refer to a kind of horticultural cosmetic surgery, and the direct objects are generally the parts being removed (*trim the lower branches*, *prune the dead branches*) or the whole (*trim the tree*, *prune the bushes*). My inclination would be to put *prune* and *trim* in a single frame, and maybe include the

phrasal verb *cut back* in it as well. The lexeme *cut* would occur, by itself or as head of a phrase, in a great many frames.

I think that grouping words into frames can incorporate any of the linguistic systems understood within field theories. There are numerous cases where closed classes of words do figure in precisely differentiated ways in semantic frames (especially as these are extended to the semantics of grammatical constructions), such as the trio {*this*, *next*, *last*} as they figure in deictic calendar expressions of the kind seen in *this week*, *next week*, *last week*.

J.A.: What I would like to ask you about now is a notion frequently used mainly by cognitive linguists, but which — I would think — has never been defined or clarified in depth: the notion of *salience*. Moreover, linguists with a cognitive bias have used the term in several different ways. It frequently pops up in the literature when the suitability or matching of particular lexical items, expressions in particular discourse contexts is discussed or rated. It seems to be the case that 'salience' is a gradable notion. Particular lexical expressions (rather than others) are salient to be used under certain discourse or other (one may ask what, in particular) conditions to provide cohesion, to contribute to the coherence of the text interpreted. One strict condition comes from background knowledge, common ground in Herb Clark's terminology (1986), I am sure. Based on your work, I would agree that salience is a frame-related criterion. Lexical expressions are used, are chosen to be used, are expected to be used saliently within a particular frame. *Milk* and *cow* have a high potential of salience, whereas the salience (and therefore, the co-occurrence, collocation of) *milk* and *goat* is considerably lower, and *milk* and *horse* are not salient at all (consequently, they do not tend to co-occur in discourse). *Ride* and *horse* are highly salient, whereas the grade of salience is definitely lower, or, for some speakers, may even be nonexistent in the case of *ride* and *cow*. But may other lexical semantic or lexical pragmatic, and cognitive semantic and pragmatic factors also be involved in the manifestation of salience, one may ask? What do you think are the cognitive and/or linguistic factors influencing the operation of salience? I know that Rachel Giora has provided interesting results researching conditions of salience in metaphor perception outlined in her work describing her graded salience hypothesis (Giora, 2003)

C.J.F.: I think I've only used the word *salience* in connection with some vague explanation I've tried from time to time to make sense of the ranking of the arguments of a verb. I know I mention it at the end of *The case for case reopened* (Fillmore, 1977b), where I imagine some ranking of argument-filler types deciding what gets realized in the 'syntactic nucleus' (subject or object) and within that nucleus, what gets to be the subject. I spoke of a saliency hierarchy for the former, and a 'case hierarchy' for the latter. This was in connection with the question of

whether the notions of subject and object were necessary parts of a case-informed grammar.

The saliency hierarchy had in first position reference to some conscious entity, preferably human, who was acting deliberately and who intended the action associated with the verb to get completed through such acting; somewhere further down was a sentient being who was having some conscious experience; further down still was some inanimate entity — or animate entity whose "animacy" was not relevant — that was just available for something to happen to it or near it. I remember at some point trying to be more specific than that, but I'm not at all sure that it would be worth trying to retrace.

I've seen the word in a number of other contexts, too, but I don't think I've participated much in such conversations. One of the uses you mention seems to refer to collocational strength or the like, which might be basically a statistical concept. If I've used *salience* elsewhere, I probably wasn't intending it as a term of art.

J.A.: Finally, I would like to ask the Father of frame semantics — who is 80 years old this year — about the much awaited frame-based dictionary. What does it exactly mean for it to be frame-based? Is it going to be frame-based in the socio-contextual, cognitive structural sense of frames, or at the level of the interfacing of frame semantics with grammar, giving precise information about the valencies not only of verbs but also of nouns and adjectives and other possible lexical expressions? Or, perhaps, will it have the capacity to cover both domains, levels of linguistic representation?

Now, here comes the "naive" but optimistic question expressing the hopes of potential users: when, possibly, will such a frame-based dictionary be available? Are our hopes to have access to such a dictionary (in case it can be called a 'dictionary' at all in the conventional sense of the word) realistic for the not very distant future?

C.J.F.: Your questions are about *frame semantics* and my answers are about *FrameNet*, because that's the work on frame semantics that is closest to my current experience. You asked about whether the final product will cover nouns and adjectives as well as verbs, and the answer is yes: the fact that we work with words of all parts of speech apparently needs to be made explicit. A common assumption is that this kind of work tends to be limited to verbs: I know that because not too long ago, before giving a presentation of FrameNet, I was introduced to an audience as someone who is preparing a valence dictionary of English verbs.

Well, the title of the 1992 paper with Sue Atkins was *Towards a frame-based lexicon*, and the FrameNet database is intended as the first step toward achieving such a lexicon. FrameNet is designed as a lexical resource for both human and machine use. But it's not likely that there will be a frame-based "dictionary" in my

lifetime that's available for general use. The work of building such a resource is extremely labor-intensive, and the current FrameNet project is not well-enough funded to have a critical mass of young lexicographers working on it. Improvements in coverage are very slow in coming. My colleague Collin Baker has various plans to use open-source methods of getting outside contributors to participate in the further development of FrameNet, through a process by which people not affiliated with the project can make proposals for new frames, can contribute annotations based on our existing corpus or can provide their own examples, all of that to be monitored, evaluated, polished, and assembled by FrameNet staff. We have only a small exploratory grant to work on it, and that's just to test the feasibility of such an approach.

If we limit ourselves to the kinds of words that have "interesting" frames — or let's say, the kinds of words whose conceptual framing that can be studied in the language behavior of ordinary speakers — we could *stop* before we *finish*. To the extent that the community at large finds frame descriptions useful, either for language understanding or for automatic text processing, researchers in specialist areas might agree to append sublexica to the general lexicon, resulting ultimately in an approximation to the ultimate full-service lexicon. Really large dictionaries offer information about words related to insect life-cycles, classification of creation myths, the structure and behavior of immunoglobulins, historical processes of language change, etc., ad infinitum, but such knowledge cannot easily be assembled from ordinary corpus-based data at the hands of non-specialist lexicographers. Commercial dictionaries have boards of specialists in art, science and engineering to help in such areas, but FrameNet is not in a position to do that.

In its coverage current FrameNet has only scratched the surface of English speakers' lexical competence, even if our goal is the level of the various Oxford, COBUILD or Longman learner's dictionaries. The point at which we could stop and rest, in short, is far in the future. One hope is that organizations producing online dictionaries or thesauri can shape them in ways suggested by FrameNet work, by giving the user online access to frame information, to varieties of valence alternatives for given lexical units, and to other lexical units in the same frame or different frames.

For such a lexicon to be frame-based would mean that for users to get full access to the meaning of a word, they would have to be able to find out whatever they don't know about the conceptual background that users of that word need to have, and we see that as having "links" to (online) documents explaining the frame, showing the selection of words that evoke the frame, and displaying the combinatory possibilities that the members of such word lists offer. The kinds of frame information would have to include everything that speakers know about meaning and context-of-use, including normative or statistical generalizations about users

with respect to age, sex, region, social status, and the like. Your question about interface with the grammar is of utmost importance, as it happens, since there are scores of grammatical constructions that either contribute their own frames, which need to be articulated with the frames evoked by the lexical material, or that have to be interpreted with instructions on how to assemble the meaning of a sentence from the meanings of its parts. Most existing valence dictionaries (see the Herbst et al. Dictionary and/or my review of it (Herbst et al., 2004; Fillmore, 2009)) limit their concern with grammar to relations of predication, modification, and complementation, but the principles by which sentence meanings are built up from phrasal meanings requires much more than that. Some members of the FrameNet team are working on including a "Constructicon" with the FrameNet database, but that has so far been a very small effort, much to my regret.

My answer would probably have been more upbeat if you hadn't begun by mentioning my age.

J.A.: Dear Chuck, as always, I have been fascinated again experiencing your clear mindedness and openness in answering my questions. Thank you very much for the interview. I wish you many more active years to come devoted to research, success in carrying out your plans and, most importantly, good health.

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Interviewer's address

József Andor
University of Pécs
Department of English Linguistics
Ifjúság u. 6.
H-7624 Pécs
Hungary

andor@btk.pte.hu

About the interviewer

József Andor is associate professor in the Department of English Linguistics, University of Pécs, Hungary. His research interests include frame semantics, lexical approaches to the study of pragmatics, syntax and textology, as well as the corpus-based linguistic description of English and Hungarian. He has published widely in these fields in various journals, edited books and volumes of conference proceedings.