Abstract

The present paper is an inconclusive discussion of questions related to Kjell Johan Sæbø’s semantic analysis of so-called criterion predicates and the by locution (adjuncts of the form by V-ing) often accompanying them. The construction type can be illustrated by the following quotation (from Google) – which, substituting the name of KJS for the anaphor, is not only an illustrative example but also an adequate statement in the present context:

Als Autoren und Leser können wir [ihn] vermutlich am angemessensten ehren, indem wir uns von seinen Arbeiten faszinieren lassen.  

1 Abstract predicates and the by locution (Sæbø, to appear)

In his ingenious paper “The structure of criterion predicates”, Sæbø (to appear) discusses the semantic representation of constructions with instrumental by adjuncts (by + V-ing) as illustrated in (1); other relevant examples are seen in (2).

(1) a. She kept her promise by dancing.
b. She maddened me by dancing.

(2) a. Kjell Johan planned to celebrate his birthday by taking his family on a bicycle tour.
b. However, his colleagues surprised him by turning up uninvited.
c. Obviously expecting to be invited in, they congratulated him by presenting him with a “Festschrift”,
d. By doing so, they almost prevented him from going through with his plans.
e. But finally he made them leave by promising to throw a party some days later.

1 ‘As writers and readers, we can probably honour [him] most adequately by letting ourselves be fascinated by his works.’
Sæbø proposes an analysis where the modified predicate “involves reference to an indefinite predicate and where the function of the instrumental by adjunct is to fill that predicate with content by unification” (Sæbø, to appear: 1). Like Kearns (2003), he takes the modified predicates to come in two main variants, subsumed under the terms **abstract predicates**: manner-neutral causatives like *madden me, make them leave, prevent him from realizing his plans, surprise him*; and **criterion predicates** like *keep her promise, respond, obey an order.*\(^2\)

Adjoined to a causative predicate, the by-locution identifies the type of event or action having the causing effect specified by the matrix predicate; with a criterion predicate, the by-locution gives us the property of the event or action making the abstract predication true – an action matching the conventional criteria laid down by the matrix predicate.

From the perspective of formal semantics, the crucial question is how to account for the meaning of these constructions in a compositional way. Sæbø argues that a compositional analysis is possible only within a formal framework allowing composition to be driven by unification rather than functional application (“flexible composition”). The solution he offers is cast in the format of the presupposition-based two-stage bottom-up version of Discourse Representation Theory outlined in Kamp (2001).

Thus, the adjunct *by dancing* in (1a, b) is represented as in (3) whereas the matrix predicates, abstracting from Tense, Voice and the Agent get the representations shown in (4) and (5), respectively (Sæbø, to appear: 12).

\[
\begin{align*}
(3) & \quad \text{a. by dancing} \\
& \quad \text{b. } \llbrace \llbrace \llbrace \Pi, \text{constant} \rrbrace \rrbrace, \quad \Pi = \lambda e \text{dance}(e) \rrbrace
\end{align*}
\]

\[
\begin{align*}
(4) & \quad \text{a. madden me} \\
& \quad \text{b. } \llbrace \llbrace e, \lambda \rrbrace, \llbrace P, \text{indefinite} \rrbrace, \quad e_1 \\
& \quad \quad P(e) \\
& \quad \quad \text{Bec}(\text{mad}(i)(e_1)) \\
& \quad \quad \text{Cause}(\text{Bec}(\text{mad}(i)(e_1))(P(e)))
\end{align*}
\]

\(^2\) The term “criterion predicate” was introduced by Kearns, who characterizes such predicates as follows: “The key notion here is some conventional criterion that an action must fulfil in order to qualify as an event of the criterion-matching kind.” (Kearns 2003: 599; quoted by Sæbø, to appear: 1). Sæbø’s manner-neutral causatives correspond to Kearns’ “causative upshot predicates” (ib.).
We congratulate – by ...

(5) a. keep a promise

b. \[
\left\{ \begin{array}{l}
\langle e, \lambda \rangle \\
\langle P, \text{indefinite} \rangle
\end{array} \right\},
\begin{cases}
f & Q \\
P & Q \\
P \subseteq Q
\end{cases}
\]
\[
\text{Promise}(Q(\text{pro}))(\text{Agent}(e))(f)
\]

Here, the box to the right is a DRS representing the content of the node in question; to the left is the store: a set of pairs consisting of a variable (e: event variable, P: predicate variable, Π: second-order predicate variable) and a binding condition. When two nodes meet under the bottom-up construction of a representation, unification of store variables is driven by the binding conditions, and the corresponding two content DRSs are merged. Indefinite store variables may stay unbound until the top level, where they enter the DRS as normal (indefinite) discourse referents. The binding condition constant, on the other hand, is introduced by Sæbø as a sub-sort of quantificational binding, and must find an indefinite variable for Π to bind. The λ-condition assigned to the event variable e in (4b) and (5b) – likewise an innovation as compared to Kamp (2001) – should be understood as classical abstraction. The bipartite structure store, content is characteristic of preliminary nodes: eventually, the store will disappear, and the meaning of the sentence as a whole will be represented as a standard DRS (often in addition to a set of presuppositions seeking justification in the preceding context).

In the present case, then, the Π variable of the by locution will unify with the indefinite predicate variable introduced by the matrix predicate, thus identifying the indefinite predicate with the constant dance. This amounts to substituting the latter for the variable P in the content DRS of the node modified by the by adjunct. The resulting representations are shown in (4’) and (5’):

\[
(4') \quad \lambda e \\
\begin{array}{l}
ed_1 \\
dance(e) \\
\text{Bec}(\text{mad}(i))(e_1) \\
\text{Cause}(\text{Bec}(\text{mad}(i))(e_1))(\text{dance}(e))
\end{array}
\]

\[
(5')
\]
(5’) $\lambda e$  
\[
\begin{align*}
  f & \in Q \\
  & \text{dance}(e) \\
  & \text{dance} \subseteq Q \\
  & \text{Promise}(Q(\text{pro}))(\text{Agent}(e))(f)
\end{align*}
\]

In ‘normal’ words:

(6) a. An event $e$ is of the type $A$ maddens $B$ by dancing iff $e$ is of
the type $A$ dances and there is an event $e_1$ of the type $B$
becomes mad such that $B$ becomes mad holds of $e_1$ because $A$
dances holds of $e$.4

b. An event $e$ is of the type $A$ keeps a promise by dancing iff $e$
is of the type $A$ dances and there is an event (action) $f$ and an
event (action) type $Q$ such that $f$ is of the type $A$ promises
(has promised) to $Q$ and $A$ dances is included in $Q$ (dancing
may be just one of several action types matching the promise
made by $A$).

Abstract predicates may, of course, occur without a by locution or any other
adjunct answering the question “How?” that such predicates implicitly give rise
to. In that case, the type of the causing or criterion-matching event remains
indeterminate at the sentence level but may be identifiable cross-sententially: the
indefinite event type referent $P$ and the event $e$ it is predicated over may in the
end be unified with referents established in the following or preceding context.
Unification of this kind induces discourse relations known e.g. under the names
of Elaboration/Specification (or Explanation?) and Abstraction (or Result?),
respectively, between the discourse segments in question (Sæbø, to appear: 18);
cf. (7) and (8).

(7) a. The boy insulted me in your bar. He told me to shut up.
b. She really surprised me. She finished her paper on time.

(8) a. You said you didn’t go! You lied to me!
b. She finished her paper on time. She really surprised me.

Sæbø’s analysis is elegant and avoids the drawbacks he points out in earlier
approaches to the semantics of criterion predicates and the by-locution. Viewed

4 Note that Sæbø like Dowty (1979) and Bennett (1994) represents causation as a relation
between propositions (facts) rather than events. This is a necessary device in order to achieve
a unified account of by locutions in criterion and causative contexts.
in a broader perspective, however, it raises some questions, partly hinted at in his paper, that I discuss below – albeit without presenting an answer.

2 Implications and questions

As can be seen from the representation of *by dancing* in (3), Sæbø does not assign a causal or instrumental meaning to the *by* phrase or the preposition *by* itself; its sole function is to substitute a predicate constant for the indefinite predicate store variable which the modified abstract predicate comes along with. Consequently, combinations of *by* locutions and matrix predicates that do not provide such a store variable should be ruled out for semantic reasons since in such cases the store variable \( \Pi \) of the *by* adjunct will find nothing to bind. But, as Sæbø notes, the *by* location may in fact combine with predicates that are apparently not of the demanded abstract – manner-neutral causative or criterion – type, without causing any semantic trouble: achievement predicates as in (9) and activity predicates as in (10) (examples from Sæbø). And here “the *by* phrase seems to contribute a causal relation of its own” (Sæbø, to appear: 19).

\[
\begin{align*}
(9) & \quad \text{a. They } \textit{find prey} \text{ by detecting minute vibrations from a distance away.} \\
& \quad \text{b. He claimed that he had } \textit{escaped} \text{ by crossing the water.}
\]

\[
\begin{align*}
(10) & \quad \text{a. Snakes } \textit{move} \text{ by throwing their bodies into backward-moving waves.} \\
& \quad \text{b. It } \textit{swims} \text{ by flexing its body from side to side.} \\
& \quad \text{c. They } \textit{feed} \text{ by filtering food particles from the water.}
\end{align*}
\]

Sæbø defends his analysis by arguing that “on closer inspection, predicates which do not appear to be abstract really are, at least in the circumstances; in other words, predicates that may not be intrinsically causative or criterial can, under the influence of certain factors, be interpreted as causative or criterial, one of these factors being the merge with a *by* phrase” (ib.) In cases like (9), then, the (non-causative) achievement predicates are coerced into (causative) accomplishments – something that may happen under other conditions, too; and the matrix verbs in (10) are arguably used in a “derived, more abstract sense“ involving an indefinite predicate store variable for \( \Pi \) to bind. So in the end, “there is reason to embrace the idea that criteriality and causativity are not fixed and lexical but flexible and contextual categories” (ib.). But then again, some predicates, e.g. *Fred combed his hair / polished his nails / put on his top hat*, “are simply too concrete or manner-specific to be interpreted as providing an indefinite predicate variable playing a part in their interpretation”, i.e. too concrete to be modified by a *by* phrase (Sæbø, to appear: 17).
However, do we really want to say that the predicates *move*, *swim* and *feed* have a somewhat different, more abstract meaning in (10) than e.g. in (11), where they are modified in other ways (b, d, f) or not modified at all (a, c, e)?

(11)  
   a. Some bivalves can *swim*.  
   b. Many decapods *swim* using paddle-like limbs called swimmarets on the abdomen.  
   c. The men were so fatigued they could hardly *move*.  
   d. A few desert snakes *move* across the hot sand in a series of sideways steps known as sidewinding  
   e. The red-billed quelea scatter during the day to *feed*.  
   f. During the winter months flocks of redpolls *feed* among the high branches of the trees.

*Move* and *swim* are both “indefinite change-of-state predicates” (in the terms of Dowty 1979), involving iterated change of place along a path, which, in the case of *swim*, is located in water; and living beings have ways of intrinsically bringing about such locomotion that are determined by their genetic equipment. By adjuncts may be used to describe how intrinsic movement is brought about for a given species, as in (10a); or they may describe deviations from some standard way, or specify within the agent-dependent range of normal options; etc. But when there is no explicit information in the context, we fill in the picture ourselves, assuming that the causing activity falls within the range of possibilities determined by the nature of the agent and the circumstances described in the context. A similar case can be made for the intransitive predicate *feed*, which – as noted by Sæbø (p. 19) – also involves iteration of an action with a culmination point, viz. getting food inside oneself. Note, by the way, that relevant information may come from other types of adjuncts than by phrases; cf. (11b, d, f).

More generally, it may be asked whether the distinction between manner-neutral accomplishment predicates like *she maddens me, we surprise him* etc. and manner-specific ones\(^6\) like *Fred combed his hair / polished his nails / put on his top hat* is as absolute as the explication proposed by Sæbø implies (presence vs. absence of an indefinite predicate variable in the semantic representation of the predicate), or whether manner-specificity is not rather a matter of degree, as Bennett (1994) seems to suggest: a question of the range of values \(\pi\) can take for a given \(\phi\) and a given agent \(\alpha\) in the formula \(\alpha \phi\text{-s by } \pi\text{-ing}\). Speculating on the verb “to nod”, for instance, Bennett (1994: 43) claims that it “does not permit

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5 Most of the examples are (in some cases adapted) from the Oslo Multilingual Corpus; see http://www.hf.uio.no/forskningsprosjekter/sprik/english/corpus/index.html.

6 The distinction was introduced by Pusch (1980).
such a wide range of values of π as does ‘to raise one’s hand’; nor does ‘to clap one’s hand’, ‘to kick’ and some others. However, these narrower verbs still leave, in their ordinary meaning, some room for answers to ‘How?’ questions other than the answer ‘By doing it immediately’”, i.e. answers that specify some “mediating” causing action different from π itself. At any rate, it is quite conceivable that Fred may put on his hat or polish his nails in non-standard ways that call for a by locution; or that the level of descriptive detail demanded in the speech situation makes the use of such a modification natural.

Simple physical acts – whether accomplishments as ‘to raise one’s hand’ or achievements in a broad sense, including “intergressives”7 like ‘to nod’ – do not allow much variation as to how they are brought about. Criterion predicates, while specifying “conventional (normative) or intentional criteria”, are “unspecific about the physical criteria an action must meet” (Sæbø, to appear: 2). However, as with causatives, (un)specificity or abstractness may be a matter of degree rather than an absolute property. In cases like break a promise, obey an order, for instance, there is no default value for π in Bennett’s (1994) formula α φ-s by π-ing: which action types fall under these predicates depends solely on what the agent has promised or been ordered. Predicates like congratulate and celebrate seem different: in the default case, we take an act of congratulation to involve a specific type of speech act, and we also have more or less stereotypical celebration concepts which we may activate when there are no other clues. But of course, more special ways of congratulating or celebrating are conceivable – specified in a by adjunct, for instance, as exemplified in (2a, c) (repeated below).

(12) a. Kjell Johan planned to celebrate his birthday by taking his family on a bicycle tour.
    b. His colleagues congratulated him by presenting him with a “Festschrift”.

To be sure, the observations made above do seem compatible with Sæbø’s analysis: When combined with a by phase, predicates that are not inherently abstract in the defined sense acquire a derived meaning that meets the demands of the by adjunct, viz. a semantic representation involving an indefinite predicate store variable. And when an inherently abstract predicate is not modified by a by phrase, its indefinite predicate variable is turned into an indefinite discourse referent, which, in its turn, may or may not be specified in the linguistic context – or by way of knowledge-based stereotypes (cf. congratulate, celebrate). However, we are still left with the problem of how to decide which predicates

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7 Intergressives are bounded events that differ from accomplishments and achievements in the strict sense by not involving a change of state (Egg 1994).
are intrinsically abstract and which are not; on closer inspection that borderline may turn out to be quite arbitrarily drawn.

It should be noted that shifting a non-abstract predicate to a criterion predicate may involve a shift of aspectual class and thematic role assigned to the external argument. The predicate *honour him* is a case in point: When used as in (13a) it is non-abstract, denoting a type of emotional attitude with the subject referent as Experiencer or Holder; modified by a *by* adjunct, as in (13b), however, it is an agentive criterion predicate denoting a set of actions that are (more or less conventionally) correlated with holding such an attitude.

(13)   a. As he was valiant, I honour him.
b. We can honour him most adequately by letting ourselves be fascinated by his work.

That is, the meaning of *honour* in (13b) is derived as compared to (13a), involving an indefinite action predicate ‘do something [showing that …]’. But how can the representation assigned to *by* by abstracting over (3) have such an effect? In more general terms: How can an analysis that ascribes a purely identifying function to *by* explain the fact that the construction type is restricted to or has a marked preference for action predicates demanding an external Agent?

3 Related constructions

The question asked above may seem somewhat unfair since the Agent issue, in addition to Tense, Aspect and Voice, is precisely that part of the formalization story Sæbø explicitly leaves out, referring to Kratzer’s (1995) theory of the Agent relation. But the issue is of central importance when we look at other constructions doing the same or a similar job as the *by* locution:

(i) Corresponding *in* locutions (*in* -ing):

(14)   a. Ty’s dad had shown additional good sense in marrying a plain woman.
b. All these tales suggested that the golem-maker had acquired arcane secrets: yet, in doing so, had transgressed Holy Law.
c. In eating the plants we combine the carbohydrates with oxygen dissolved in our blood and so extract the energy that makes us go.
d. Fibich had, in buying it [the picture], aspired to nobility.
e. In solving one problem we have only encountered a more curious question.
f. He grabbed it and held it before his face and in doing so spilled most of the powder all over the front of his fancy tweed jacket.

(ii) Non-prepositional -ing adjuncts:

(15) a. Many decapods swim using paddle-like limbs called swimmarets on the abdomen.
   b. Getting rid of the glasses, you’ve become less womanish.
   c. They fought against going, enlisting me and their father against Rose.
   d. They mistook his gentleness, taking it for what it appeared to be instead of the strength of will.
   e. Mostly it was hot chocolate she made, warming the milk in a saucepan on the stove before mixing it.

(iii) Prepositional adjuncts of the type with + NP:

(16) a. They congratulated him with a Festschrift.
   b. We celebrated the event with vintage wine and quiet talk.
   c. She silenced him with a sharp remark.
   d. I hinted we might seal our new-found solidarity with a dram.
   d. He goes outdoors to feed with wild things.

(iv) Various other “event-internal” (Maienborn 2003) prepositional adjuncts:

(17) a. They feed on the sugary nectar of flowers.
   b. A few desert snakes move across the hot sand in a series of sideways steps.

It would take us too far to discuss the options mentioned in (iii) and (iv), which differ from our main subject by involving genuine prepositional phrases instead of non-finite verb phrases.

As for (i), it is an interesting question whether and how in locutions differ semantically from by locutions. The two adjunct types seem exchangeable in some contexts, as for instance in (14a); but at the same time, in adjuncts might appear to be less restricted with respect to causativity than by locutions; cf. (14f); and Kearns (2003: 629) suggests that criterion predicates have a certain preference for in locutions. But how to capture such distinctions if we ascribe a purely identifying, non-instrumental meaning to the by locution, covering its function with criterion predicates as well as manner-neutral causatives?
Regarding (ii), non-prepositional -ing adjuncts have a wider range of interpretation possibilities than our by (and in) locutions, partly because they are typically used as free adjuncts, i.e. without being fully integrated in the matrix clause, and partly because the interpretation is not restricted by whatever constraints the preposition by (or in) induces. Behrens & Sæbø (1997) have outlined a semantic analysis of free -ing adjuncts within the framework of classical DRT (see also Behrens 1998). They represent the adjunct as a DRS with an anaphoric discourse referent for the controlled external (PRO) argument. The adjunct DRS is merged with the matrix DRS in the usual presupposition-driven way, involving a certain amount of knowledge-based accommodation etc. In this way, Behrens & Sæbø (1997) are able to account for the interpretation of abstract predicates modified by free -ing adjuncts, i.e. constructions where the latter can have the same effect as by (or in) locutions; cf. for instance (15a-b). 8 In the framework of Sæbø (to appear), these cases would represent a non-finite variant of contextual identification of the indefinite event type referent introduced by the abstract main predicate; compare (7) in section 1. With other main predicates, however, updating must proceed in a different way.

Obviously, the classical DRT account of free -ing adjuncts to abstract predicates (Behrens & Sæbø 1997) and the analysis to be derived from Sæbø (to appear) deserve a more thorough comparison. It might be that the former is after all more flexible and that it could be adequately exploited for an alternative analysis of by locutions.

A look at German and Norwegian may be interesting in this connection (cf. Fabricius-Hansen & Behrens 2001). German has no direct counterparts to the three -ing variants under discussion here. Instead it has a finite-clause subordinating connective (subjunction) indem ‘in that’ that covers the semantic domain of by and in locutions as well as certain usages of free -ing adjuncts falling outside the range of the two prepositional -ing adjuncts. In addition, indem occurs, rather marginally, in a “purely” temporal use, expressing temporal inclusion, and occasionally in an “event-external”, i.e. higher-level, causal use corresponding to (causal) as/since. In Norwegian, we find a prepositional ved å ‘by to’ + infinitive as a counterpart of the English by location as well as a subjunction idet corresponding to German indem. However, the instrumental use of the subjunction seems to be stylistically somewhat marked in Norwegian, characteristic of non-fictional genres – perhaps due to the existence of a competing instrumental locution (ved å). Below are some characteristic examples from the Oslo Multilingual Corpus (OMC).

8 Except that as free adjuncts, the former do not focus on the (relation between) adjunct (and main predicate).
We congratulate – by ...

(18) a. Begab man sich nicht einst auf der Flucht unter den Schutz eines Menschen, *indem* man sich auf dessen Schwelle niederließ?

b. Didn't a fugitive put himself under someone's protection by sitting down on his threshold?

c. Når noen var på flukt i den gamle tid, da kunne han gi seg inn under en annens beskyttelse *ved å sette seg* på hans dørterskel.

(19) a. He swung into action at once to make his room his own, *stripping* off the ugly bedspread and stuffing it into a closet.

b. Er ging unverzüglich daran, sich in seinem Zimmer häuslich einzurichten, *indem* er die scheußliche Bettdecke abzog und in den Schrank stopfte.

c. Det grønne fløyelsskjørtet med border nederst delte seg, *idet* hun la celloen mellom knærne.

(20) a. The bordered green velvet skirt divided itself *as* she placed the cello between her knees.

b. Der grüne Samtrock mit der Borte am Saum teilte sich, *als* sie das Cello zwischen die Knie nahm.

(21) a. ‘there is a close connection between sociality and the idea of individuality the latter carries in itself the seedling of sociality’

b. Es besteht ein enger Zusammenhang zwischen Sozialität und der Idee von Individualität, *da* [‘as/since’] letztere, insofern sie universelle Geltung beansprucht, in sich selbst den Keim zur Sozialität trägt.

Accounting for the semantic variation of *indem/idet* constructions in an adequate way will demand a very abstract, underspecified semantic representation of the connective and strong general principles of pragmatic reasoning governing the interpretation, e.g. in the spirit of Zeevat 2005; compare also Maienborn (2003). The common denominator might be an abstract notion of “inclusion”, covering a set of conceptually related relations (set inclusion, set membership, part-whole relation, …). How this relation is instantiated in a given context depends on the nature (semantic type) of the entities *indem* connects, i.e. on whether the *indem*
clause is an event-internal modifier or adjoined higher up in the tree. – But I shall stop speculations and come to an end.

4 An inconclusive conclusion

The comments made in sections 2-3 above do not necessarily represent objections to Sæbø’s theory: they are explorative and inconclusive reactions to a thought-provoking paper. However, with a view to competing constructions in English and the cross-linguistic data mentioned above, I am not convinced that representing by (adjuncts) as void of instrumental or causal meaning is an optimal solution; it seems worth while to try out possible alternatives within the same framework (cf. Solstad, to appear, this volume). I also suspect that in the end, pragmatics will have even more to say than suggested in Sæbø’s fascinating paper.

References


