The nanosyntax of *Path*

Juan Romeu (ILLA-CSIC)[1]
juanromeux@hotmail.com
May 22nd, 2013

Very preliminary draft

Abstract. In this paper I examine the notion of *Path* and its presence as a projection in the structure. I give evidence that there is no projection *Path* as such in the structure. The notions related to *Path* ('sequence of points' and 'directionality') are obtained by different means.

1. Introduction: A *Path* projection

1.1. The origin

In order to explain elements like *into* in English and the differences between elements like *in* and *towards* Jackendoff (1983) postulated that the underlying structure of *Ps* should be decomposed into two layers, *Place* and *Path*, where *Path* is built over *Place*:

(1)
```
            PathP
           /    \
       Path      PlaceP
                /    \
            Place     DP
```
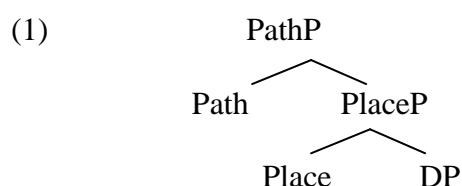
By means of this decomposition it is possible to give the structure of an element like *into*:

(2)
```
            PathP
           /    \
       Path      PlaceP
        to       /    \
             Place     DP
              in
```
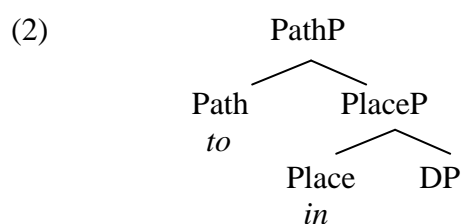
For Jackendoff the *Path* function returns a *Path*.
However, in his work it is not clear what *Path* is: does it represent a set of points?; does it represent directionality?; does it represent both?

1.2. Possible definitions of *Path*

Path has mainly been related to two notions in the literature: the notion of a set of points and the notion of directionality.

Several authors agree in the idea that a *Path* is an atemporal sequence of locations (Bierwisch, 1988; Verkuyl and Zwarts, 1992; Nam, 1995). This explains why *Path* elements can appear in stative constructions like the following:

(3)   a bridge out of San Francisco (Fong 1997:2)

(4)   La carretera va a la playa
       'The road goes to the beach.'

Two main questions arise from this definition. First, is it actually the preposition the element that gives the meaning of 'sequence of regions' or 'set of points'? Couldn't it be *la carretera* in (4) the element that gives the meaning of 'set of points'? Second, is there actually a set of points in any case a *Path* element is present? Consider an example like *John went to the supermarket*? Is there actually a set of points in the same way as in (3) and (4)?

Also *Path* has been related to the notion of directionality. Many authors have related directional Ps to *Path* (cf. Gehrke 2008).[2] This explains why these elements can't combine with verbs like *remain* or *stay*, which don't represent a change of location and, hence, don't accept directionality:
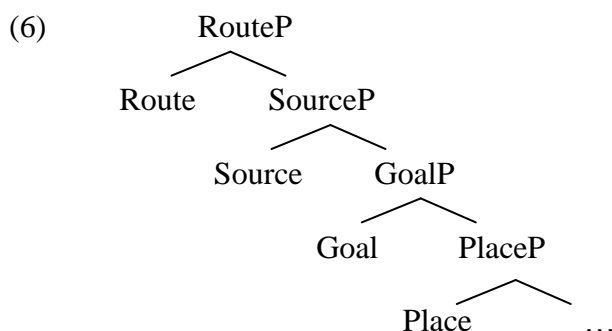
(5)   a. The box stayed in / on / under / behind the table.
       b. *The box stayed to / into / onto / from the table.
                                                    Gehrke (2008:8)

1.3. A *Path* projection in recent works

Following the decomposition of *Ps* in Jackendoff (1983), many authors have worked in a cartographic way in order to provide a more fine-grained structure of these elements. However, in almost all the works of these authors a projection that encodes the notion of *Path* is still present (Fábregas 2007, Gehrke 2008, Koopman 2010, Svenonius 2010, Pantcheva 2011), sometimes even with the label 'Path'. I will focus on two of these works: Pantcheva (2011), for whom paths are sequences of points and Fábregas (2007), for whom Path is related to directionality.

Pantcheva (2011) decomposes *Path* into different projections in light of the morphological elements in different languages. She arrives to the following basic decomposition:

(6)   RouteP
           ╱   ╲
        Route   SourceP
                ╱   ╲
            Source   GoalP
                     ╱   ╲
                  Goal   PlaceP
                          ╱   ╲
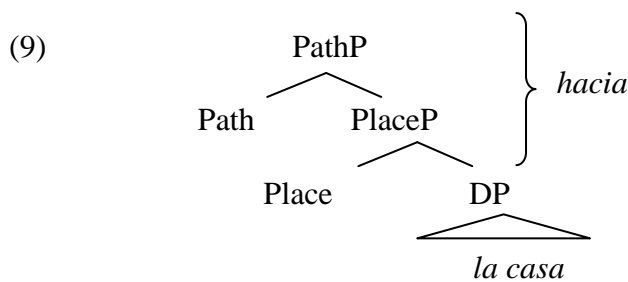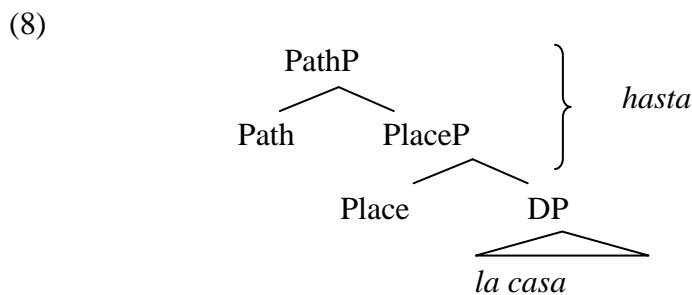   Place   …

---

[2] The correspondant to the *path* projection is some times labeled as 'P$_{Dir}$' (cf. Den Dikken 2010, a.o.).

If we take one of them, *Goal*, which can be related to certain kind of paths, we see that, in line with Zwarts (2008), Pantcheva argues that the basic representation of a goal path is represented in the following way:
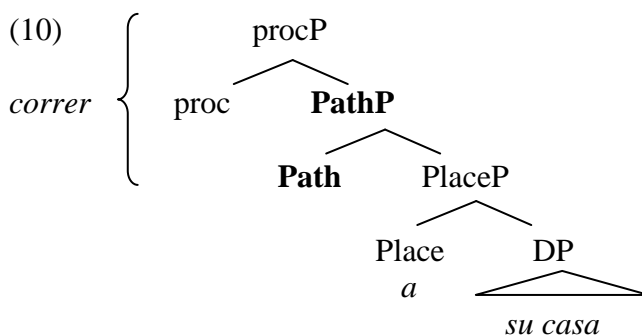
(7)   -----+++++

Here, the minus signs represent the points of the path in which the Figure is not at the Ground and the plus signs are those in which the Figure is at the Ground. This means that for her Goals represent a set of different points: the minus signs and the plus signs.

In Fábregas (2007) *Path* is related to directionality. This way, elements like *hasta* ('up to') or *hacia* ('towards') in Spanish lexicalize *Path*, unlike *a*, which for him is locative:

(8)
```
        PathP          ⎫
        /   \          ⎬  hasta
     Path   PlaceP     ⎭
            /    \
         Place    DP
                 /  \
               la casa
```

(9)
```
           PathP          ⎫
           /   \          ⎬  hacia
        Path   PlaceP     ⎭
               /    \
            Place    DP
                    /  \
                  la casa
```
                                        Fábregas (2007:190)

But for Fábregas (2007), also directional verbs like *correr* ('run') can lexicalize *Path*:

(10)
```
         ⎧         procP
         ⎪         /   \
  correr ⎨      proc   **PathP**
         ⎪             /    \
         ⎩         **Path**   PlaceP
                           /    \
                        Place    DP
                          a      /  \
                               su casa
```
                                        Fábregas (2007:189)

In his work, it is not clear what it means that both *hacia* and *hasta* lexicalize *Path* and why a verb can also lexicalize this projection.

It is still necessary to explain what *Path* represents: is it a set of points?; does it represent directionality?; does it represent both?

1.4. Main problems in previous works

The first problem is that if directional Ps like *hasta* represent a set of points it should be possible to find examples in which a verb like *recorrer* ('cover'), which can combine with elements that represent a path like *carretera*, combines with an element like *hasta* ('up to'), but this is not the case:

(11)   Juan recorrió la carretera
         'Juan covered the road.'

(12)   *Juan recorrió {hasta su casa/hacia su casa}.
         'Juan covered {up to/towards} his house'

Moreover, if *hasta* lexicalizes *Path*, it should also be the case that we could find cases in which verbs like *ir*, which combine with elements like *hasta*, could combine with elements that actually represent a path like *la carretera* ('the road'):

(13)   *Juan fue la carretera.
         'Juan went the road.'

The second problem is that, if *Path* represents directionality, it is not expected that directional elements are found in locative constructions as it is the case:

(14)   a. La casa está al norte.
            'The house is to the North.'
         b. Mi casa está hacia allá.
            'My house is towards there.'

A possible solution for this second problem is to say that directional elements start as locative elements. This goes in line with the Extended Structural Ambiguity Hypothesis in Real Puigdollers (2010), based on the in Structural Ambiguity Hypothesis in Gehrke (2008):

(15)   For any spatial preposition that can be interpreted as locative, it is only locative. Any ambiguity between a directional and a locative meaning is structural.

                                        (Real Puigdollers 2010:129)

The directional interpretation of the locative Ps is given by the structure, i.e. the directional interpretation is PP-external.
As we will see later, I agree in the fact that *Path* elements are locative, but I claim that their directional interpretation comes from a modifier they lexicalize, i.e. it is internal.

In sum, we have seen that *Path* can't represent a set of points because elements that lexicalize *Path* don't appear in the same contexts as elements that actually represent paths. Moreover, *Path* can't be reduced to directionality because there are certain directional elements that appear in locative constructions.

4

2. Main tools I use

To explain the way in which *Path* is encoded in the structure I use a nanosyntactic model with certain modifications.

From Nanosyntax I take the idea of a fine-grained syntactico-semantic structure (in line with Svenonius 2010), i.e. a syntactic structure in which each projection encodes a semantic component. I also take from Nanosyntax the idea that the structure is lexicalized by means of phrasal spell-out. This means that a single lexical item can lexicalize a chunk of the structure (cf. McCawley 1968, Starke 2009, 2011, Fábregas 2007, Svenonius 2010, Pantcheva 2011). This is represented as follows:

(16)

aaaa
```
        XP
       /  \
      X    YP
          /  \
         Y    …
```
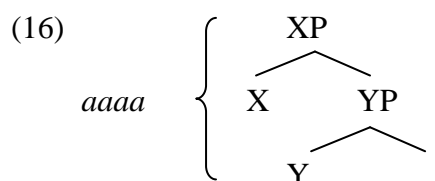
In (16) the lexical item *aaa* spells out both the XP and the YP, not just one single terminal like *X* or *Y*.

I further take from Nanosyntax that lexicalization is postsyntactic (cf. Starke 2011). Lexical items are phonological labels that are introduced once the structure is built.

There are however certain tools that I extend from Nanosyntax. First I assume that there are modifiers that change the properties of the terminals of the *fseq*.

A modifier is a non-terminal element of the structure that changes the properties of the head it combines with. A modifier is represented as follows:

(17)
```
              XP
             /  \
          Mod    X'
                /  \
               X    …
```

This definition of modifier goes in line with the one that appears in Zwarts and Winter (2000). For them a modifier is the element that applies to an element (BP or B-bar) and gives the same element (BP or B-bar). In this case a modifier would apply to *Place* and give back *Plae*:
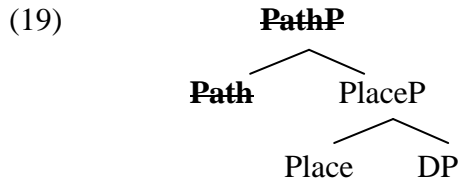
(18)   Place → Place

These modifiers may be lexicalized independently or together with the terminal they modify if there is a lexical item available in a given language that can do that.
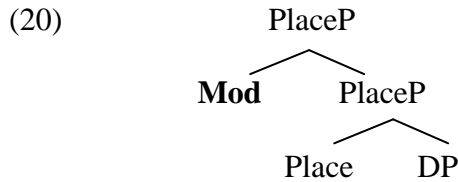
3. The proposal

3.1. Introduction

I claim that there is no projection in the basic structure or functional sequence (*fseq*) that lexicalizes *Path* over *Place*:

(19)   ~~**PathP**~~

          ~~**Path**~~   PlaceP

               Place   DP

The notion of *Path* is interpreted by other means. One possibility is by means of certain modifiers of *Place*:

(20)   PlaceP

         Mod   PlaceP

              Place   DP

This way it is possible to explain well-known contrasts like the following:

(21)   a. El vaso está **a** {el borde de la mesa/*la mesa}.
         'The glass is at {the edge of the table/the table}.'
       b. Juan fue {a/*en} su casa.
         'Juan went {to/in}his house.'
       c. Juan bailó {hasta/*a} su casa.
         'Juan danced {up to/to} his house.'
       d. Juan recorrió {la carretera/*hasta su casa/*hacia su casa}.
         'Juan covered {the road/*up to his house/*towards his house}.'

3.2. *Path* in modifiers

I suggest that there is no projection *Path* as such, but the meaning of directionality and set of points can be entailed by other means. Here I show that one way is by means of modifiers of *Place*
I present two modifiers. The first one, *Displace*, gives directionality. The second one, *SetPoint*, gives directionality and the entailment that there is a set of points in the event.
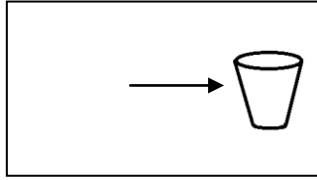
3.1. *Displace*

Displace is a modifier that gives the interpretation that a point is reached from another. It can be seen in examples like the following:

(22)   El vaso está al borde de la mesa
         'The glass is on the edge of the table.'

In a case like this, the interpretation is that the location of the glass is displaced from where it another location:
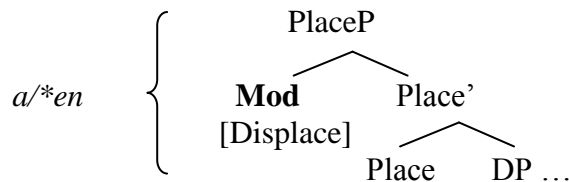
(23)

In other words, the position of the glass is interpreted as "displaced" from the center of the table. A case like this can be considered as a basic example of terminal coincidence (Hale 1986, Hale and Keyser 2002).

I claim that this is possible by means of the modifier *Displace*. In Spanish *a* and not *en* can lexicalize this modifier:

(24)

As the interpretation is that the location of the Figure is related to other, it is possible to consider that there is directionality. This doesn't mean that the glass has moved, but that the location where it is located is considered to be displaced.

Now, the question is how it is possible to have a directional element in a locative construction.

To interpret a dislocation in a locative construction it is necessary that two locations are interpreted. *El vaso está al borde de la mesa* doesn't mean that the glass has moved to the edge, but that its location is established with respect to a point of reference, considered the basic location. A "directional" element like *a* is possible in these cases as long as it is possible to understand these two locations.

Elements like *borde* are *AxParts* (cf. Fábregas 2007), i.e. they represent parts of elements. The two needed locations are, first, the part and, second, the element to which the part belongs: *edge* and *table*, respectively.

If it is not possible to interpret a second location, the presence of *Displace* is not possible and, hence, the lexical item chosen is *en*:

(25)   Juan está {en/*a} su casa.
              'Juan is {in/to} his house.'

In directional constructions, it is obligatory to understand two locations. Therefore, in those cases, *a* is obligatory:[3]

(26)   Juan fue {a/*en} su casa.
        'Juan went {to/in} his house.'

On the contrary, *a* is possible in locative (and, hence, stative) constructions because it doesn't give a change of location of the Figure, but the interpretation that a location is displaced. As *Displace* gives back a *Place* it is possible to consider *a* as locative.

This solves the debate with respect to the directional or locative condition of *a* in Spanish. It is locative because it represents a location (its higher head is *Place*), but at the same time it can be considered to be directional in the sense that it entails two points (which doesn't mean that there is change of location of the Figure).

One further advantage of my analysis is that the same structure is kept for *a* in locative and directional constructions:

(27)

a {

```
                    PlaceP
                   /      \
            Displace    Place'
                        /      \
                    Place      DP …
```
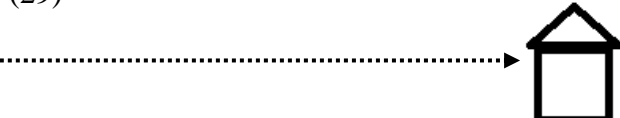
Here, what is external is, for instance, the interpretation of movement, which comes with the verb, but the notion of directionality is already present.

3.2. *SetPoint*

SetPoint gives the interpretation that the element it combines with belongs to a set (or a scale):
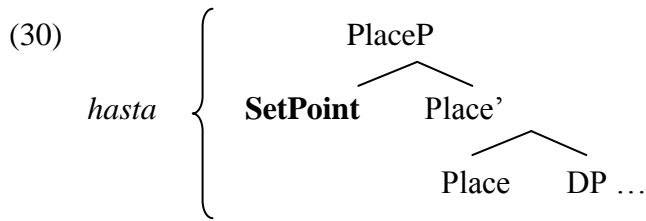
(28)   Juan fue hasta su casa.
        'Juan went up to his house.'

In an example like this, the house is interpreted as the last point of a set:

(29)

---

[3] I assume that in the case of verbs like *entrar*, which can combine with *en*, the expression introduced by *en* gives the location of the final state and it is not the complement of the predication
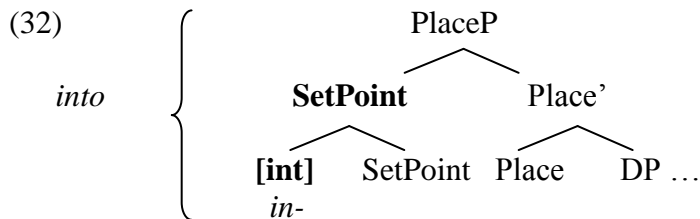
The underlying structure of an element like *hasta* is the following:

(30)
$$
hasta \left\{ \begin{array}{c}
\text{PlaceP} \\
\widehat{\quad} \\
\textbf{SetPoint} \quad \text{Place'} \\
\widehat{\quad} \\
\text{Place} \quad \text{DP} \dots
\end{array} \right.
$$

SetPoint gives the interpretation that the *Place* belongs to a set. The interpretation that it corresponds to the last point of a set comes from a modifier of *SetPoint*

(31)
$$
\begin{array}{c}
\text{SetPointP} \\
\widehat{\quad} \\
\textbf{[final limit]} \quad \text{SetPoint}
\end{array}
$$
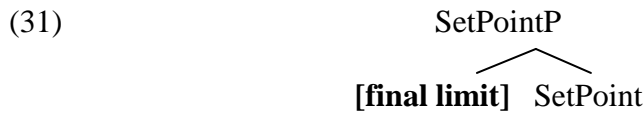
This modifier could give a different meaning like the one of initial point. In that case *desde* ('from') would be the element chosen in Spanish. It could also give the meaning of interiority, for instance. This would explain cases like *into*, without saying that *in* lexicalizes *Place* (in line with Noonan 2010):

(32)
$$
into \left\{ \begin{array}{c}
\text{PlaceP} \\
\widehat{\quad} \\
\textbf{SetPoint} \qquad \text{Place'} \\
\widehat{\quad} \qquad \widehat{\quad} \\
\textbf{[int]} \quad \text{SetPoint} \quad \text{Place} \quad \text{DP} \dots \\
\textit{in-}
\end{array} \right.
$$

The presence of *SetPoint* gives the interpretation that there is a set of points in the event, although it doesn't represent a set of points by itself. This explains certain things. First, it explains why *hasta* can't appear in contexts in which a set of points can:

(33)   a. Juan recorrió la ciudad
           b. *Juan recorrió hasta su casa.
            'Juan covered {the city/up to his house}.'

This is because *hasta* represents a spatial relation and not an entity that corresponds to a set of points.

It also explains why *hasta* can combine with verbs like *bailar*, unlike *a*:

(34)   Juan bailó {hasta/*a} la pared.
           'Juan danced {up to/to} the wall.'

This example shouldn't be possible according to Talmy's typology: verbs like *bailar* can't combine with directional Ps in Spanish. However, it is possible because a verb like *bailar* needs durativity in the event and the entailment of a set of points gives allows to have this durativity.

9

This gives evidence that Talmy's typology can be explained by means of the lexical items available in languages (in line with Son 2007, Fábregas 2007, Real Puigdollers 2010)

Further evidence that there is a path entailed is that, apart from a counterfactual interpretation, with *hasta* it is possible to have a scalar interpretation in combination with negation. This is not possible with *a*:

(35)   a. Juan no fue a su casa
           'Juan didn't go to his house.'

            → He didn't start
            → *He started but didn't arrive

        b. Juan no   fue hasta su casa
           'Juan didn't go to his house.'

            → He didn't start
            → He started but didn't arrive

In conclusion, *Path* is not present in the structure but its properties are entailed from the presence of a modifier that, for instance, *hasta* lexicalizes in Spanish, like *to* in English

3.3. Two important questions

Two important questions may remain unsolved. First of all, why are *Displace* and *SetPoint* modifiers? I assume that they are modifiers because of three reasons: they may appear in different positions, because they don't give a new element and because they are not necessarily present in all languages.

They could be considered terminals because they determine the properties of the element they combine with:

(36)   Juan fue {a/*en} su casa – 'Juan went to his house.'

Here, *Displace* could be said to determine the selectional properties of *a su casa*, allowing it to combine with a verb like *ir* ('go'). However, it is important to note that modifiers can condition the semantic properties of the element they combine with, restricting its properties with respect to selection.

The second question is if *SetPoint* and *Displace* are the same. It could be that they are the same element with a different modifier that determines if the element is a single point or if it belongs to a set. For now, I assume that they are different.

4. *Place* over *Path*?

There are examples in which a location seems to be based on a directional element:

(37)   La casa está hacia allá
           'The house is towards there.'

For examples like this, it has been claimed that there is a projection related to *Place* higher than *Path*:

(38)   PlaceP
                                  Place   PathP
                                            Path   PlaceP…
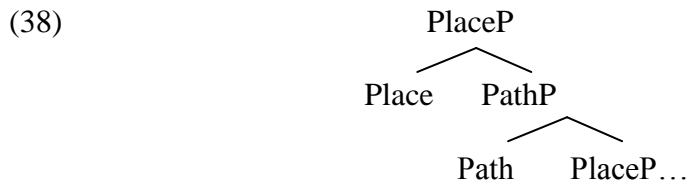
For instance, Svenonius (2010) postulates a *G-function* which returns a *Place* from a *Path*:

(39)   PlaceP
                                  G   PathP
                                            Path   PlaceP…
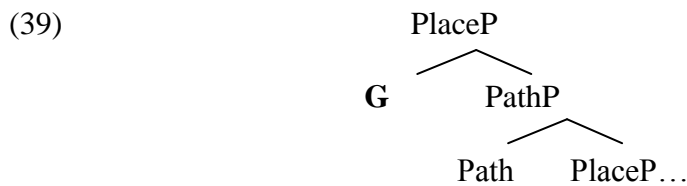
(40)   Across a meadow a band is playing excerpts from *H.M.S. Pinafore.*

                                              Cresswell (1978)

By means of modifiers like *Displace* or *SetPoint* it is not necessary to postulate a projection related to *Place* higher than *Path*:

(41)   PlaceP
         hacia   **Mod**   PlaceP
                                            Place   …
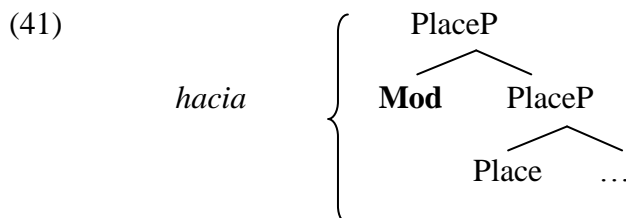
As the presence of these modifiers gives back a *Place*, the elements that lexicalize them can appear as locative elements, as we have seen before for the case of *a*.

11

5. Other situations in which a *Path* is entailed

There are other constructions in which it is possible to entail a set of points: extended locations and routes.
In extended constructions, an extended Figure gives a set of points, which makes that no motion is interpreted, despite of the presence of a verb like *ir* or *go*:

    (42)   La carretera va a la playa.
                   'The road goes to the beach.'

In route constructions, the location is dispersed or multiplied by means of a modifier:

    (43)   Los niños fueron por la carretera.

    (44)

```
                              PlaceP
                             /    \
  por  {      [Mod]         PlaceP
              Dispersion    /    \
                        Place     DP
```

The combination with a directional verb gives the interpretation that the location is the path of the motion event.

In both cases, again, the interpretation of 'set of points' doesn't come from a *Path* projection. In the first case, it comes from the intrinsic meaning of the extended entity. In the second case, it comes from the *Dispersion* modifier.

6. Conclusions:

I have argued that *Path* is not encoded as a projection in the structure. Its meaning is entailed by other means. One way is by means of modifiers like *Displace* and *SetPoint*. *Displace* gives the interpretation that a location is dislocated with respect to another, which gives directionality. *SetPoint* gives the interpretation that a point belongs to a set. This gives the entailment of a set of points in the event, but also, given the adequate modifier of *SetPoint*, it gives directionality.
This allows to say that Ps are locative in the sense that their higher projection in any case is *PlaceP*.

This way I explain, among other issues, the use of directional elements in locative constructions, the nature of elements like *a* or *hasta* in Spanish, but also *to* or *into* in English, and the apparent exceptions for Talmy's typology.

References:

Bierwisch, Manfred. 1988. On the grammar of local prepositions. In Manfred Bierwisch, Wolfgang Motsch, and Ilse Zimmermann (eds.): *Syntax, Semantik und Lexikon*, *Studia Grammatica 29*. Berlin: Akademie-Verlag, 1–65.

Cresswell, Max J. 1978: Prepositions and points of view. Linguistics and Philosophy, 2: 1-41.

Den Dikken, Marcel. 2010. "On the functional structure of Locative and Directional PPs". In Guglielmo Cinque and Luigi Rizzi (eds.): The cartography of Syntactic Structure, vol.6. Oxford: Oxford University Press, 74-126.

Fábregas, Antonio. 2007. "An Exhaustive Lexicalisation Account of Directional Complements". *Nordlyd: Tromsø Working Papers on Language & Linguistics 34(2)*, 165-199.

Fong, Vivienne. 1997. *The Order of Thing: What Directional Locatives Denote*. Ph.D. thesis, Stanford University.

Gehrke, B. 2008. *Ps in Motion: On the Semantics and Syntax of P Elements and Motion Events* (LOT Dissertation Series 184). Utrecht: LOT Publications.

Hale, Ken. 1986: Notes on World View and Semantic Categories: Some Warlpiri Examples. In Pieter Muysken & Henk van Riemsdijk (eds.): *Features and Projections*. Dordrecht: Foris, 233-254.

--and Samuel J. Keyser. 2002. *Prolegomenon to a theory of argument structure*. Cambridge, MA: MIT Press.

Jackendoff, Ray. 1983. *Semantics and cognition*. Cambridge, MA: MIT Press.

Nam, Seungho. 1995. *The Semantics of Locative PPs in English*. Phd dissertation, UCLA.

Koopman, Hilda. 2010. "Prepositions, postpositions, circumpositions, and particles". In Guglielmo Cinque and Luigi Rizzi (eds): *Mapping Spatial PPs: The Cartography of Syntactic Structures, vol. 6*. Oxford University Press, 26-73.

Noonan, Maire. 2010. À to zu. In Guglielmo Cinque & Luigi Rizzi (eds.), *Mapping Spatial PPs. The Cartography to Syntactic Structures, Volume 6*. Oxford: Oxford University Press, 161-195.

Pantcheva, Marina. 2011. *Decomposing Path. The nanosyntax of Directional Expressions*. PhD dissertation, Tromsø University.

Real Puigdollers, Cristina. 2010. "A microparametric approach on goal of motion constructions: properties of adpositional systems in Romance and Germanic". *Catalan Journal of Linguistics* 9, 125-150.

Son, Minjeong. 2007. "Directionality and resultativity: The cross-linguistic correlation revisited". In Monika Basic, Marina Pantcheva, Minjeong Son and Peter Svenonius (eds.), *Tromsø Working Papers on Language and Linguistics: Nordlyd 34.2, Special issue on Space, Motion, and Result*. Tromsø: Tromsø University, 126–164.

Starke, Michal. 2011. "Towards elegant parameters: Variation reduces to the size of lexically stored trees". Transcript from a talk at Barcelona *Workshop on Linguistic Variation in the Minimalist Framework*

Svenonius, Peter.2010. "Spatial P in English". In Guglielmo Cinque and Luigi Rizzi (eds.): *The cartography of Syntactic Structure, vol.6*. Oxford: Oxford University Press, 127-160.

Verkuyl, Henk & Joost Zwarts. 1992. "Time and space in conceptual and logical semantics: The notion of path". *Linguistics* 30, 483–511.

Zwarts, Joost. 2008a. "Aspect of a typology of direction". In Susan Rothstein (ed.): *Theoretical and Crosslinguistic Approaches to the Semantics of Aspects*. Amsterdam: John Benjamins, 79–106.

--and Yoad Winter. 2000. "Vector space semantics: A model theoretic analysis of locative prepositions". In J*ournal of Logic, Language, and Information* 9, 169-211.