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Accomplishments: their Telos and their Structure*

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Abstract. This paper explores the relevance of a goal directed characterisation of the internal structure of accomplishments. The notion of 'plan' enables us to talk about the homogeneity and the continuity of the activity phase at a sufficiently abstract level, and about non-homogeneity when one consider the structure of instances of accomplishments in global terms, i.e. including culminations. Evidence is provided for this intensional characterisation that enriches a definition the aspectual class based on temporal conditions.

1 Introduction

In this paper we examine arguments for appealing to event-centred criteria in characterising accomplishments and more generally in identifying subevents. Initial motivation for our inquiry came from facets of the interpretation of sentence (1) highlighted by two situations in which it is appropriate.

(1) Max repaired the radio in one hour.
   a. Max took to pieces only half of the device, worked on that half and put it all back into one functioning unit in an hour.
   b. Max fiddled around with the device for 15 minutes, sat still for 15 minutes and then worked with his hands actively on the device for 30 more minutes and succeeded.

In the situation described in (1a) the theme is not incrementally fully affected, and in the situation described in (1b) action is not visible throughout the hour. The first issue has been raised by Rothstein (2004) and presented as a problem for the analysis of the telicity of accomplishments based on the notion of incremental theme proposed by Krifka (1998). The second point, in our opinion, raises a problem for Rothstein's analysis based on temporal schemata, in which the notion of incremental activity is characterised by a chain structure. In this paper, we look at existing analyses in a perspective that gives prominence to

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the goal oriented internal structure of accomplishments in their intensional definition. We point out how the distinction between conceptual intensional events and real extensional ones is fruitful for discussing the relation between the parts within an accomplishment, not just between partial and completed events, as done w.r.t. progressivised accomplishments. The notion of 'plan' – a term referring to the conceptualisation of an event driven by a goal – enables us to talk about the homogeneity and the continuity of the activity phase of accomplishments at a sufficiently abstract level, and about their non-homogeneity when one consider the structure of instances of these events in global terms, i.e. including the culmination. In section 2, we provide a quick review of key notions on the aspectual class of accomplishments established by Vendler in his classic contribution. In section 3, Krifka's and Rothstein's analyses are summarised and the issues raised by example (1) are further discussed, then in section 4 we present a goal directed view of accomplishments and the proposal by van Lambalgen & Hamm (2005). Empirical traces of plans and interaction between plans and temporal information are discussed in section 5.

2 Accomplishments in Vendler's Classification

Vendler (1967) has defined four classes that help us to classify the English verbs according to the most common time schemata they imply. They are *states, activities, achievements*, and *accomplishments*. Duration and homogeneity are two crucial properties in his classification. *Duration* is taken to explain the compatibility of accomplishments and activities with the progressive, which involve periods of time. In this, they contrast with states and achievements, which involve time instants. *Homogeneity* is exploited for distinguishing accomplishments from activities: "Any part of the process is of the same nature as the whole"(Vendler 1967: p.101) only for the latter class, cf. their different behaviour when combining with temporal adverbials of the form *in # time/ for # time*. Activities go on in time in a homogeneous way. If Max ran for an hour, then it is true that he ran at any time during that hour. On the contrary, accomplishments are not homogeneous. If Max built a sand castle in an hour, then it is not true that he built one at any time during that hour.

Grounding aspectual distinctions exclusively on temporal properties of moments and intervals of time is not satisfactory, as Vendler himself noted. The non-homogeneity of accomplishments follows from their characterising property, i.e. their proceeding "toward a terminus which is logically necessary to their being what they are"(Vendler 1967: p.101). As a consequence, their temporal structure is organised into ordered parts, none of which includes this terminus, apart from the very last one. This view naturally meshes with

our conceptualisation of the event as made up of parts that are causally related at some level. In short, order and a local form of homogeneity are the ingredients of Vendler's notion of incrementality. Incrementality is relevant for accomplishments and activities, as it goes together with duration, which sets achievements aside, and with a form of change, which sets states aside.We turn to it next.

3 Telicity and Incrementality of Accomplishments

3.1 Incrementality via a Homomorphism between Part Structures

Krifka (1998) characterises telicity (2) as the property of an event predicate X that if it applies to an event e, then it does not apply to a part of e that begins or ends at a different time. Thus, all parts of e that fall under X are initial (INI) and final (FIN) parts of e.

(2) $\forall X \subseteq U_E[TEL_E(X) \leftrightarrow \forall e,e' \in U_E[X(e) \wedge X(e') \wedge e' \leq_E e \rightarrow INI_E(e',e) \wedge FIN_E(e',e))]]$

Quantised predicates, as opposed to *cumulative* ones, fall in the group of telic event predicates. If an entity is in the denotation of a quantised predicate, it does not have proper parts that also are in the denotation of the predicate. Quantisation and cumulativity are relevant also for nominal predicates. The transfer of properties from arguments to the event is regulated by conditions on the thematic roles of the participants. They are mappings from the structure of the object to that of the event and vice versa.

(3) *mapping to subevents* (MSE)
For all x, y in the domain of entities P and all e in the domain of events E, MSE(θ) iff $\theta(x,e) \wedge y <_P x \rightarrow \exists e'[e' <_E e \wedge \theta(y,e')]$

(4) *mapping to subobjects* (MSO)
For all x in the domain of entities P and all e, e' in the domain of events E, MSO(θ) iff $\theta(x,e) \wedge e' <_E e \rightarrow \exists y[y <_P x \wedge \theta(y,e')]$

Strict incrementality is a property of theta roles and is defined by the joint effect of MSE, MSO, a constraint that requires subevents that correspond to subobjects to be unique, a constraint that requires parts of an object to be participants in unique subevents, and by excluding situations where both object and event are atomic. The net result is that the extent of the incremental accomplishment described in (5) is determined by the extent of the theme and the eating of the last part of the apple marks the culmination of the eating event.

(5) Max ate the apple.

As the event grows temporally in (5), the part of the path related to the event via a theta role also grows (Krifka 1998). The path determines the incremental structure of the event. However, one can truthfully utter sentence (1) to describe situation (1a) where the theme is not incrementally fully affected, and telicity would have to come from a quantised theme without MSE property.

(1) Max repaired the radio in one hour.
   a. Max took to pieces only half of the device, worked on that half and put it all back into one functioning unit in an hour.

Krifka is aware that the extent of the theme is too narrow a domain for the homomorphism characterising the accomplishment, and has proposed to use property scales measuring an abstract dimension rather than physical entities, and considered specific pragmatic requirements.[1] Krifka's proposal might be modified by using very abstract property scales to measure events, not objects, but this results in a departure from the appealing initial intuitions behind the mappings between theme and event, that are the essence of his proposal.

3.2 Incrementality as Accumulating Quantities of a Process

Rothstein (2004) has claimed that the generalisation developed by Krifka does not suffice to cover the reading (1a) where the theme is only partially involved. In her analysis, an accomplishment is an activity paired with a BECOME event, which is a change of state that 'accompanies' it.[2] It has an incremental structure built with stages[3] (Rothstein 2004: 38), and its crucial role is to measure the accomplishment's progression. The activity part is related to the developmental

[1] E.g. the eating in (5) is taken to be completed before the disappearance of the whole apple because the core is disregarded. However, this type of pragmatic requirement concerns the identification of the borders of the object, not its progressive coverage.

[2] Dowty's (1979) BECOME operator applied to Φ yields formulae true at non-minimal intervals s.t. $\neg\Phi$ is true at the initial bound and Φ at the final one. Rothstein's BECOME events characterise the incremental part of change events 'from φ to ϕ, where φ is a state which entails $\neg\phi$'(Rothstein 2004: p.155) and ϕ is the state lexically specified by the accomplishment predicate. It is not clear how φ can be characterised other than as the stative antonym of ϕ by stipulation.

[3] Rothstein's proposal uses the notion of *stage* from (Landman 1992), which is an event e that 'develops into' e' and shares with it relevant properties of the event description, i.e. not just any part of e' qualifies as a stage. For the purpose of accomplishments, a stage is a subevent e of the process part that can be described by the same property that would be used to describe the process part. The notion of stage helps Landman (1992) to ground the notion of normality, needed in his modal analysis of the progressive, in the properties of the event descriptions. In this way he gets around the problem noted in the literature that if a plan is associated with an agent, it cannot be used for establishing truth conditions when there is no agent planner, e.g. with inanimate subjects.

structure of the BECOME event via an incremental relation INCR[4] that fixes the order of the parts. In other words, an accomplishment is an incremental process defined to be isomorphic to a chain lattice that encodes two essential bits of information, namely incrementality and culmination. The incremental component is represented via the chain structure and is defined w.r.t. an order provided by pragmatics and associated to the activity part of the event. The upper bound of the chain is said to coincide with the culmination that is to be assigned to the activity part to build the whole accomplishment. The template for accomplishments is as in (6).

(6) $\lambda y \lambda e \exists e_1, e_2 [e =^{s} (e_1 \sqcup e_2)$
$\wedge$ ACTIVITY$_{<X>}(e_1) \wedge Ag(e_1)=x \wedge Th(e_1)=y$
$\wedge$ BECOME$_{<Y>}(e_2) \wedge Arg(e_2)=Th(e_1)$
$\wedge$ INCR$(e_1, e_2, C(e_2))]$ (Rothstein 2004: p.108)

The radio lying untouched is a problem for Krifka's proposal.[5] Max's being idle is one for Rothstein's because it does not fit in her chain structure of homogeneous stages. One can truthfully utter (1) to describe situation (1b) where action is not visible throughout the hour, and the theme is not directly affected at times like in (1a).

(1) Max repaired the radio in one hour.

b. Max fiddled around with the device for 15 minutes, sat still for 15 minutes and then worked with his hands actively on the device for 30 more minutes and succeeded.

Rothstein's positing an incremental process amounts to grounding on the event and on pragmatics the incrementality that Krifka grounds on the theme, but when the activity part is not locally homogeneous, incrementality cannot be grounded on it. Landman's notion of stage is the counterpart of Dowty's activities downward closure postulate on intervals, as both characterise activities and capture a local form of homogeneity in accomplishments.

[4] INCR$(e_1, e_2, C(e_2))$ in (6) reads as e_1 is incrementally related to e_2 w.r.t. the chain $C(e_2)$.

[5] It might be one for Rothstein too, because the BECOME event is constrained to be a change of state 'which happens to the theme' (Rothstein 2004: p.108). The situation is not entirely clear, because either the BECOME event simply provides a temporal constraint and ensures the transition from $\neg$P to P, in which case it could be disconnected from the theme; Or it defines a change in the theme that should be incrementally regular, because of the chain structure.

4 The Structure of Complex Events

4.1 The Link between the Parts

Both Krifka's and Rothstein's analyses pursue previous work. Krifka's proposal develops Dowty's (1979), who models accomplishments and their telicity in thematic terms. For Dowty, the attainment of a certain result state is caused by the culmination of a process under the impetus of an agent. The operator CAUSE he uses in the logical structure, helps him coding the difference between achievements and accomplishments thematically, in terms of causation and not in terms of temporal properties of the event. In his view, "accomplishments are partly defined by the changes of state with which they terminate" (Dowty 1979: vii). In Dowty's proposal, causality is expressed as a relation between propositions rather than subevents, and is based on Lewis's theory of causal dependence according to whom a counterfactual dependence among events is a counterfactual dependence among the corresponding propositions.[6] According to Krifka, the culmination of the event is introduced indirectly in the characterization of the event by identifying it thanks to the quantization of the theme.

Rothstein's proposal is reminiscent of Vendler's aspectual classification based on the temporal properties of the predicates. As seen above, for Vendler two components are related, i.e. an accomplishment is a process terminated by a finishing point expressed in the predicate, and the telicity that characterises this type of predicates is brought about by a change corresponding to the transition to a resulting state. But he adds that "Somehow this climax casts its shadow backward, giving a new colour to all that went before" (Vendler 1967: 102). In a way, the whole event is named after the last link in a causal chain. Rothstein explicitly rejects any causal link between process and resulting state. She leaves to pragmatic the task of saying something about the nature of this link, but uses a sum of events to enforce temporal contiguity. In her proposal, the increment in the event is computed w.r.t. a 'natural and inherent order' of the parts of the event determined by real-world knowledge and represented by the order in the chain structure of the BECOME event.

In Krifka's and Rothstein's analyses, the processive part and the culmination are not directly linked, they just belong to the same unit. The unity of the event is constructed either all in the theme or all in the temporal structure. There

[6] As a potential exception to his proposal, Dowty mentions the class 'creation of a performance object', exemplified by *produce a play, perform a sonata*. Dowty notes that 'the state of having reached the end of the performance of a sonata does in a sense define the successful completion of *perform a sonata*'(Dowty 1979: p.186), but adds that this is little enlightening (in contrast with the crucial role of the coming into existence of a letter in the truth conditions of *write a letter*).

is a form of identity that boils down to structural similarity. In the following, we explore a way to capture the link in the spirit of Vendler's quotation above. The unity of accomplishments is grounded in their being events described as goal driven. The notion of plan is not meant to place conditions directly on what the process leading to the culmination consists of, rather it provides an intensional definition that associates constraints on what can be going on at intermediary stages with constraints on what the global view on the situation has to be.

4.2 Goal Oriented Actions and Plans

Suppose that Max is thinking about the problem during the 15 minutes of pause sitting still in (1b). One may suggest that some repairing activity goes on all the same. We still seem to have a problem in Rothstein's approach, because the incremental structure is defined in a way that can be read as a constraint imposing homogeneity in a local form, via Landman's notion of stage, while barring it in a general form, since the telos must be excluded. Stages have been devised by Landman to deal with the progressive, where coidentification of (sub)events is possible because the model provides the set of possible extensions. But (1b) highlights the difficulty in getting at an intensional characterisation of the aspectual class by looking at the extensional parts.

Continuity w.r.t. a goal is the second aspect of accomplishments to which example (1) draws our attention. The continuity suggested by taking 'sitting still' to mean 'progress in the repairing by thinking about the problem' is a feature accomplishments share with activities. The change that marks the culmination of an accomplishment is due to a force that drives the elements of the whole structure continuously. The goal is an ingredient of the representation of the event, but it is not a temporal relation on its parts. It is what enables us to make sense of the complex internal structure of the event, since it reconciles the activity part, which in itself needs not be strictly homogeneous – no divisive lexical predicate is applied to it – but is seen as incremental, with an entity being created, be it an abstract one like the state of a functioning radio or a performed sonata, or less so abstract like a house. Lexical aspect classes identify types of situations, which can then be described with linguistic expressions. Plans are goal driven conceptualisations of eventualities and the expression of a plan relies on the fact that 'Aktionsart' choices are ways to encode an event type while simultaneously possibly indicating related preceding and/or subsequent event types. Rothstein's incremental process and isomorphic chain lattice amount to the unfolding of the plan and could be made to correspond to the traversal of an abstract path in Krifka's terms.

We are interested in plans to which we can refer with verbs and the constituents they form. Plans lexicalised by predicates can be viewed as intensional

characterisations of streamlined sequences of subevents. In intensional semantics in the style of Lewis, expressions are represented by arbitrary functions of (worlds and other) indices to sets of objects. Moschovakis (1994) has explored an alternative view that may be more promising from the cognitive point of view, according to which the intension of an expression is the algorithm that computes its extension. An algorithm is a semantic object, a form of knowledge representation that shows one how to use a set of operations she already knows to compute a result.

A plan allows us to enforce the presence of some structure within the event and may express a cause relation, but not necessarily one that is found in the physical reality. We draw inspiration from the work of van Lambalgen & Hamm (2005: 36), who say "Planning means setting a goal and computing a sequence of actions which provably suffice to attain the goal." In this framework, a correct plan is like an abstract procedure according to which a goal is surely achieved in every world in which the premises are met. We would add that it is perceived as standardized at this abstract level.[7]

The plan is part of the description conveyed by the verb and is not the making of a sentient agent, therefore it should be kept separate from contingent epistemic considerations. It embodies the intensional property of telic situations and (complex) activities. The fact that an agent may have partial knowledge of the world and the presence of contingent facts become relevant in the realisation/implementation of a plan. Partial knowledge opens the possibility of there being unexpected events that may affect the realisation of a plan, because they may change properties in the context. Van Lambalgen and Hamm's definition relates to the notion of minimal model, where the events that happen are all and only those required to happen by the axioms of the system. This rests on the idea that all changes must be due to a cause, and a property persists unless an event causes its change. Normality is envisaged in terms of consequences of a set of premises. In this way, it is possible to keep distinct the plan, which is defined exclusively with respect to the goal, from its actualisation, which is determined also by other states of affairs arising or falling back and which can alter the compatibility of a world with the minimal model. In using a predicate, the speaker commits herself to the validity of the intensional characterisation w.r.t. her knowledge state. The commitment w.r.t. the actualisation is mediated by temporal information, and progressivised accomplishments illustrate one of the several nonmonotonic phenomena in natural language, cf. section 5.3.

[7] The algorithmic process for a plan is far from standardized, as van Lambalgen (p.c.) points out. When people agree on what the goal state is, variation could arise when defining what causes this goal state, so as to perform the appropriate sequence of actions to get at it.

4.3 Causes and Plans

We follow van Lambalgen & Hamm (2005) in seeing causation as a notion pertaining to the physics of events, but relevant to humans in structuring a cognitive plan from which (the description of) an event originates. Van Lambalgen and Hamm implement Moschovakis idea of meaning as algorithm in an event calculus in order to represent the semantics of verbs. They primarily use *fluents*, which are time-dependent properties as well as partial changing objects, and time-independent event types, which can initiate and terminate fluents.[8] They characterise expressions in aspectual classes via an eventuality structure that is a quadruple like in (7). Each element may be left empty or be filled with an object of the appropriate category, i.e. *e* for an event and *f* for a fluent. All the four elements are necessarily instantiated in eventualities representing verbs in the accomplishment class.

(7) An eventuality is a structure (f_1, f_2, e, f_3), where
f_1=cause: represents an activity, something that exherts a force;
f_2=theme: represents a parametrised object or state, which is driven by the force f_1;
e=culmination: is the culminating event, representing the canonical goal;
f_3=result state: represents the state of having achieved the goal.

Eventuality structures are used to build scenarios, which are a conjunction of statements that state the specific causal relationship holding in a given situation. An elaborate internal structure is specified for each entry, and variation from person to person is allowed to a certain extent. These statements are expressed in their event calculus, which contains a truth-predicate stating that a fluent *f* holds true at a time point *t*, and four primitive predicates that are determined by axioms or definitions.[9] This apparatus is sufficient for the first of two different notions of cause van Lambalgen and Hamm use in defining the internal structure of scenarios associated with lexical entries. This notion is concerned with *instantaneous change*, e.g. a collision. The other notion is concerned with change induced by ongoing action or due to a force that exherts its influence continuously and culminates in the result state, e.g. filling a bucket or pushing a cart. *Continuous change* is concerned with incremental processes and is modelled using two other primitive predicates of the calculus, devised for changing

[8] The entity event represents actions with or without being initiated by an agent. A fluent is the transformation of first-order formulae into terms. Events happen and fluents hold, so that they can be arguments for the truth-predicate.

[9] They concern: i) a fluent that is true initially in the discourse considered and not interrupted or terminated; ii) an event type *e* that happens at time point *t* (thus becoming an event token); iii) an event that initiates a fluent or iv) terminates it.

partial objects. *Trajectory* states that if a fluent holds from time point t to $t+d$, then at $t+d$ another fluent starts to hold. This predicate establishes the causal link and allows us to represent e.g. a force whose influence changes the degree of completion of a house in a building event, with no need to assume a full house in some possible world. *Release* states that the law of inertia[10] is suspended so that a force can have an impact on a fluent. This predicate allows a modification of the stages of an object without specification of concomitant occurrences of events causing the changes, hence it captures the intuition that e.g. there aren't separate actions that initiate and terminate the fluents *height(x)* for various values of x in an event of filling a bucket. Together, they enable us to represent the situation in (1) both if the functioning property is viewed as acquired gradually or all at once at the end.

In accomplishments, the force is the tension toward the goal and this gives conceptual unity and homogeneity to a potentially disparate set of subevents. In particular, the identification of the goal is what enables us to apply the same description, e.g. 'build a house', to different sets of subevents, cf. the different building processes followed in different cultures. The increment needs not correspond to fluents representing physical properties of a theme, as illustrated by example (1). Differences are all the more evident in the case of non-conventionalised accomplishments. The different streamlined sets of subevents correspond to different programs that implement Moschovakis's abstract algorithm corresponding to Frege's sense or intension, and to our plan, which they all share. Such sets or programs compute/determine the denotation of the term, Frege's referent, and justify its belonging to a specific coherent class.

5 Plan's Empirical Traces and Other Considerations

5.1 The Plan's Continuity: Gaps, Lulls and Superevents

As pointed out above, sentence (1) can be used to describe situation (1b) where action might not be visible throughout the time interval. We have proposed that the change that marks the culmination of an accomplishment is presented as due to a force that exherts its influence continuously. The plan encodes the continuity of the tension towards the goal of repairing the radio, and is unaffected by Max's sitting and thinking. His searching the space of causes of faulting functioning is part of the progression towards the goal.

This view of plans as encoding a tension towards the goal extends to activities, where the goal is the actualisation of the activity itself. In this sense, activities can be viewed as culminating at each minimal subinterval. In our

[10] Expressible as 'normally, nothing changes', this law takes care of the properties that do not change as the result of an action, cf. the Frame Problem identified in artificial intelligence.

view, this tension is at the root of the homogeneity Landman (2008) is after in his discussion of lulls in a Vienna waltz, during which a person is 'dancing' also when standing still, at particular points in the sequence of steps. Landman identifies two axes that we interpret as follows. There is an *incremental axis* of progression for the event, along which the plan of the waltzing is mapped, and which is projected onto a *segmental axis* for time along which the actualisation is plotted. Landman insists that progression on the incremental axis is possible as long as we are willing to say that the same event is continuing. We link such willingness to the adherence to the plan. Specifications on the intention of the agent may be added. In his example, dancing a Vienna waltz is a complex activity socially defined according to a plan. The dancers must stand still at given times, but the temporal trace of the event contains no gaps because of this, because all subevents of the object under description in the incremental axis are parts that can be added along the segmental axis.

Gaps usually come from other events, and correspond to subintervals whose length should not be added to the duration of a given event. But negligible interruptions cannot be told apart from non negligible interruptions merely in temporal terms, because they may or may not be seen to belong to the incremental axis, as illustrated by the phenomenon of event-internal pluractionality (Tovena 2010). The plan needs to be taken into consideration. Consider first an accomplishment. Sentence (8a) is not understood to say that Luisa never ever stopped in her eating the apple, e.g. to scratch her nose. Sentence (8b) also does not bar negligible interruptions, yet it presents the eating as being discontinuous in a way (8a) is not. The same modification is possible in activities, cf. (9). The goal oriented view tells us how to sort subevents into parts that belong to a bigger event, and gaps that do not. The verb in (8b) helps one to make precise that the event contained lulls that come under the same event description, hence cannot be neglected in computing the duration although the 'rule' that gaps are not taken into account applies as usual. In a *mangiucchiare*-event, the eating is 'purposefully' disrupted w.r.t. its canonical unfolding, in the sense that these idle times are presented as relevant for the standard communicative goal for which that type of sentence can be used. The suffix on the verb in (8b) overtly marks that the plan has been modified with respect to its canonical form.

(8) a. Luisa ha mangiato la mela. (Italian)
'L. ate the apple.'
b. Luisa ha mangiucchiato la mela.
'L. ate the apple on and off.'

(9) a. Luisa ha dormito tutto il giorno.
'L. slept the whole day.'

b. Luisa ha dormicchiato tutto il giorno.
'L. dozed (fitfully) the whole day.'

Going back to situation (1a) once more, we see that the continuity of the plan is preserved even in case there are some false starts or failed attempts, in the sense of wrong diagnosis of the problem, which is not the case for the incremental process the way is defined by Rothstein. A goal oriented view of accomplishments makes it possible to see the analogy between false starts and the case of events that have parts that do not directly affect a portion of the theme, e.g. putting up or taking down the scaffolding in an event of building a house, which (Rothstein 2004: 9) considers to be a serious problem for Krifka's theory of incrementality.

Up to here, what said was useful for 'plain' and progressivised accomplishments alike. Example (10) shows an interesting discrepancy w.r.t. identifying superevents. The issue was discussed by Ogihara (1989), who talks of the need of seeing a (coherent) unit for the agent when an amalgamation of some atomic events counts as collective event.

(10) Max ate/ #was eating three rolls.

Ogihara refers to the agent's intention, which is external to our notion of plan. However, the simple past presents iteration of atoms and unique superevent as equivalent interpretive options, while the latter is the one required for the progressive and not directly supported by a plan. This observation boosts the idea of algorithm as a piece of descriptive knowledge with a classificatory role more than as a way to compute uses and get extensions. van Lambalgen and Hamm's treatment seems to ascribe equal felicity to the options in (10).

5.2 Agency and Accomplishments

Prototypical accomplishments can be combined felicitously with manner adverbs, cf. (11). The modification can be seen as introducing an additional condition which is the availability of an agent. Yet, the notion of plan is not inherently associated with that of a (volitional) agent. The data in this section show that this is the typical case but it is not the expression of a constraint.

(11) Louise intentionally crossed the street.

Accomplishments with inanimate subjects, seem not to naturally occur as the complement of *finir* (finish), which is a typical test for telicity, cf. (12).[11,12]

[11] Thanks to Brenda Laca for the observation and the example.

[12] The complement of *finir* must be introduced by *de* for the telicity test to work. When it is introduced by *par* we get the inchoative reading, which is fine for the corresponding form of (12a).

(12) a. #Les vagues ont fini de creuser un trou dans le rocher. (French)
'The waves finished digging a hole in the rock.'
b. Les vagues ont creusé un trou dans le rocher.
'The waves digged a hole in the rock.'

The problem could be due to *finir* and its requirement for a volitional agent subject, rather than to telicity. However, first, note that (12a) remains odd even if we add a volitional agent (13). Second, inanimate subjects are not completely ruled out, if the unfolding of the event follows a program (14). Furthermore, the telicity of the predicate in (12b) is not so well established although it passes the test with *in # time*, see (15) where *tout* works as an egressive marker.

(13) #Max a fini de creuser un trou dans le rocher.
'M finished digging a hole in the rock.'

(14) La machine a fini de laver le linge.
'The washing machine finished washing (the linen).'

(15) #Max/#Les vagues ont creusé tout un trou dans le rocher.
'M/The waves digged up a hole in the rock.'

The contrast between (12a) and (14), and the marginality of (15), are explained away in terms of whether it is possible to add to the implementation of a plan a constraint defining an action terminating the process which is not specified only contextually. The vagueness of *creuser un trou* does not seem to interfere with the need for picking a time at which the result state of a hole being there holds (12b), but it does interfere when such a time should mark the completion of the digging (15). In other words, we may not be sure of when exactly the predicate starts to hold, but we feel confident enough to judge when the time is inside the interval at which the sentence is taken to express a true proposition. When the identification of such an exact time is relevant, as in (12a) and (15), the vagueness of the predicate affects the felicity of the sentence. Recall also Dowty's observation that the conventional implicature of *finish* should include the 'definability' of the property describing the whole event in terms of the properties of its steps. Typically, the characteristics of a perspective taken on a situation are the intentional state of the agent, but they can also be the characteristics of the physical layout of the relevant actors in the situation, cf. (16).

(16) The tomatoes finished ripening.

Tomatoes do not 'plan' to ripen, but it is in the nature of fruit to do so, and the scenario would contain actions that are natural events with no specified agent.

Culmination is determined by a given value in the dimension along which the progression is recorded. The terminating point is the onset of the state denoted by the adjective from which the deadjectival verb is derived, cf. (Kearns 2007).

5.3 Plans and Temporal Information

The notion of normality mentioned above, envisaged in terms of consequences of a set of premises and axioms, is relevant for the expression of a plan via the assertion of a proposition expressed by a sentence containing given lexical expressions. Hence, the speaker commits herself to the feasibility of the plan in the actual world at speech time with respect to reference time. Normality concerns the applicability of a plan. Actualisation usually requires normality up to completion. When speech time precedes the final time of the eventuality under discussion, a second form of normality checking is possible and concerns the actualisation of the plan. Here is where unexpected events enter the scene and nonmonotonicity is relevant. A first case to mention is due to the progressive aspect and is known as the 'imperfective paradox'. Although PROG φ entails φ for atelic predicates, such as *run* – e.g. (17a) entails (17b) – this entailment seems not to hold for telic predicates, such as *build a hut* in (18), in which an event's anticipated culmination is at issue.

(17) a. Max was running.
b. Max ran.

(18) a. Max was building a hut.
b. Max built a hut.

In possible worlds modal-style analyses (cf. Dowty 1979; Landman 1992), progressive creates an intensional context, and it is enough for completion to take place in worlds in the set of inertia worlds or in the closest world to which it is reasonable to move. Instead, we suggest that by assuming that plans come with sets of conditions that must be met when the scenario starts, the speaker commits herself to the feasibility of the plan in the actual world at utterance time w.r.t. reference time, not to its completion. The point of interruption past which one would move counterfactually can only be brought about by unexpected events, which are external to the commitment. Truth conditions for sentences with progressive forms must include compatibility between the world at reference time and the conditions on the model imposed by the predicate, but no commitment is taken on the full realisation, i.e. on the stability of the model. The counterfactual move is not required in a nonmonotonic approach (Hamm & van Lambalgen 2003).

Futurate sentences contain verbs in present tense form and convey that a future-oriented eventuality is planned (19). They are another relevant configuration. Here speech time precedes the initial time of the eventuality.

(19) Exams begin next week.

Futurates assert the existence of a plan providing for the actualisation of an eventuality according to Copley (2008). Our notions of plan differ, and we think that the commitment is not so strong, although it is heavier than in the case of choosing a progressivised accomplishment predicate. The plans behind accomplishments are not concerned with positioning goals in time. The futurate reading looks as if the speaker commits herself to the fact that the premisses are satisfied at utterance time w.r.t. reference time concerning an event that is to be started in the future. She minimally commits herself to not foreseeing events that could interfere with the applicability of the plan, throughout the interval up to the beginning of the actualisation, temporally suspending nonmonotonicity.

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