The Scope of *just*: Evidence from Information-Structure Annotation in Diachronic English Corpora

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Abstract

The current research explores *just* in Corpus of Middle English Prose and Verse and EEBO as a focusing adverb, which demonstrates its standing and development throughout 14-17 century English. Automated data retrieval and analysis provides new insights into the adverb transformation from the contextual perspective, as well as, shows its grammaticalization cline based on various chronological timeframes. The analysis proves that the polysemous meaning of the form correlates with syntactic changes relevant for every time frame and is determined by information-structural considerations. To check the initial hypothesis the study required annotation of giveness-neweness tagging in the text segments retrieved from the corpora. To ensure the automated and semi-automated procedures, the methodology relies on Discourse Representation Theory proving corpus tagging algorithms taking into account discourse, encyclopedic, situational and scenario contexts. Labeling the relevant constituents for their information status presupposes employing "coreference resolution" enabled through "Cesax" coreference editor. The further manual study of focusing *just* centers on its position in the XP along with word-order patterns registered. To observe regularities in word order fluctuations in the models a special attention is given to different Focus types marked by the adverb in XPs, viz. informational, identificational, contrastive, emphatic, etc.

Keywords

Information structure, discourse representation structure, given/new information, Focus, focusing adverb, grammaticalization, corpus.

1. Introduction

The paper addresses adverb *just* in Middle and Early Modern Corpora, which is classified as a focusing restrictive employed to delineate the focus value more emphatically without explicit highlight of alternative values [1, p. 35]. As a focus marker in Modern English *just* can be used as an exclusive meaning "only" (1) or as a particularizer in the sense of "exactly" (2) appearing in front of the syntactic constituent it modifies. E.g.

1. His first pay cheque was just fifty pounds.
2. You look just like your sister.

COCA search data [2] reveal three meanings typical of *just* in Present-Day English (PDE): 1) focusing exclusive – and nothing more; focusing 2) particularizer – exactness or preciseness; 3) temporal adverbial with the meaning a moment ago, highlighting that the adverb is less likely to occur in academic style, while it's more applicable in TV discourse (Fig. 1).
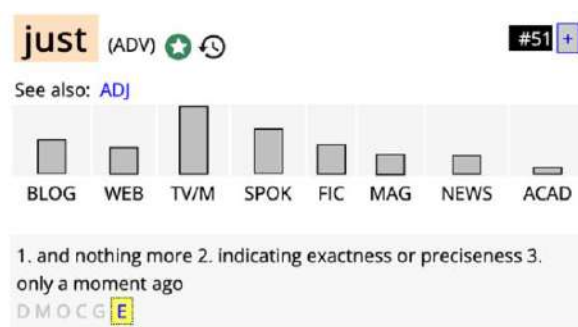
Figure 1: The meanings of adverb *just* in COCA Corpus based on styles

The current research is aimed at identifying grammaticalization cline for Middle and Early Modern English focusing

adverb *just* as an information-structural marker in Present-Day English. The scientific novelty of the study is connected with applying information-structural analysis to Corpus data retried based on Discourse Representation Theory [3; 4] and Cesax software model [5; 6], which allows automated and semi-automated marking of information-structural components on the basis of automated and semi-automated algorithms. This will allow providing a better insight into quantitative and qualitative data interpretation in terms of grammaticalization processes, as well as exemplifying correlation of focusing adverbs standing and development and their role in the information structure of the sentence from the diachronic perspective.

2. Related works

The category of adverbs represents a wide range of meanings starting with identifying time to location or manner. In the process of language development adverbs can be differentiated by their degree of grammaticalization (special suffixes that emerged as a result of lexicalization or desemantization) [7, p. 508]. Adverbs generally represent the most heterogenous class of lexicon, which served a "wastepaper basket" for all the words that did not fit the main categories, viz. nouns, verbs, adjectives [8; 9]. Focusing adverbs as a class was singled out at the end of the XX-century-grammars. In modern grammars the other terms are applicable when referring to this class: "focusing modifiers" [10; 11; 12], "focusing particles" [13; 14; 15], "scalar operators" [16]. The studies of focusing adverbs in modern linguistics [14; 16; 17; 18; 19; 20; 21] allow singling out restrictive and additive adverbs with their further division into exclusives, particularizers, scalar and non-scalar additives.

Historically the mentioned above adverb goes back to Latin adjective *iustus* and adverb *iust* that had an equivalent in Middle French in the form of the adverb *justement* introduced into English firstly as an adjective by the end of the XIV cen. [22]. Corpus studies of Middle and Early Modern English adverb *just* can shed light on the questions of its grammaticalization, as well as, its transformation into a Focus marker throughout XIV-XVII cen. English.

In the light of the above, the current research explores adverb *just* in *Corpus of Middle English Prose and Verse (ME Corpus)* and *Early English Books Online Corpus* (*EEBO Corpus)*, where presumably its major adverbial function is focusing particularizer meaning '*exactly, precisely*' [23]. Additionally, according to E. Traugott [24] *just* in Middle English (ME) was employed as a manner adverb rendering the meaning of 'fittingly', however, this function did not survive in PDE. E.g.

3. For to make the basinet sitte juste [4, p. 305].

Corpus data in the current studies are aimed at checking the following hypothesis: the cline for adverb *just* grammaticalization in English presupposes its initial functioning as an ADJECTIVE → POLYSEMOUS ADVERB → PARTICULARIZER →? EXCLUSIVE ADVERB. As K. Aijmer [25] speculates polysemous meaning of *just* arises as a result of implicature or inference licensed by conversational principles, albeit the researcher agrees with T. Nevalainen [23, p. 16] that during earlier stages of language change such transformations are possible due to metaphorical abstractions. From the perspective of the current study the meaning expansion and further specialization correlates with syntactic changes within the period under investigation with adverbial function arising gradually within

the period of general word order (WO) normalization that led to finding new means in the language to represent information-structural relations [26]. Considering this fact, another aspect to be taken into account is connected with variations in *just* positioning in the sentence due to its general dependency on Focus as a defining characteristic of focusing adverbs [14; 27; 28]. Such complex approach enables to define the correlation of the suggested grammaticalization cline, syntactic peculiarities and information structure marking (IS) in the course of XIV-XVII-century English development.

3.   Methods: information-structural analysis

To observe the regularities of WO fluctuations in tokens with *just* in two Corpora under analysis a special attention is given to different actualization statuses of information (given-new), as well as, Foci types marked by the adverb. The theoretical framework for given-new annotation is based on Discourse Representation Theory [3; 4; 29; 30; 31; 32] eliciting several types of contexts in the text fragments: discourse, encyclopedic, situational and scenario-context. To introduce the theoretical framework for the investigation, I'll recap some peculiar feature of discourse analysis, as well as, present the coreference editor that partially allows automated and semi-automated coding of the givenness status among discourse referents.

Discourse Context. The study of givenness suggests building a file that retains all the DPs previously mentioned in the text, which are known as discourse referents (DRs). The core idea of the framework is to track whether the DP is a new DR or not. To illustrate the principles of givenness annotation Haugh, Eckhoff & Welo [29] demonstrate how the hearer or reader frames up a mental model of the current discourse, identified as a discourse representation structure (DRS). It consists of two parts: a universe of DRs and a range of DRS criteria that help encode the information. In DRT the box visualization of the sentence in (4) is assigned the manifestation in Fig 2.

4. A wolf howled.

Figure 2. Box notation of DRS for sentence "A wolf howled".

Suppose that sentence (4) is followed by sentence (5).
5. It was hungry.
The discourse context representation of sentence (5) is illustrated in Figure 3.

Figure 3: Discourse context for sentence "it was hungry".

Pronominal *it* shown as a DR *y* corresponds to a discourse referent highlighted in the previous context. Hence, the next operation for sentences (4) and (5) termed merging of DRS is given in Fig. 4.

Figure 4: Enriched context in DRS

Another case is **Encyclopedic context,** which allows to level those discourse referents that have not been highlighted in the previous discourse though they may be perceived as given for the reader (*king of jews* instead of *Jesu*). E.g.

6. oh <u>jesu</u> have mercy on us. (A true & faithful relation, 1659, EEBO)
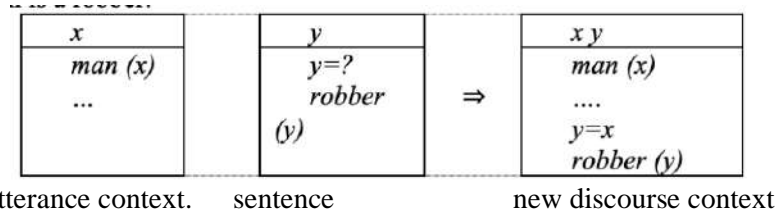
jesu (x) have mercy (x, y) on us (y)

7. oh <u>king of jews</u> have mercy on us (A true & faithful relation, 1659, EEBO)

8. MERGE: king of jews (v) have mercy (v, y) on us (y)

Situational context allows to level the discourse referents based on the general information. E.g.

9. This man is a robber.

utterance context.   sentence   new discourse context

Figure 5: Situational context in DRS

Scenario context suggests the interpretation of anaphors based on scenario-knowledge, which can be exemplified by the generalization *All planes have pilots*, illustrated as the condition in Figure 6:
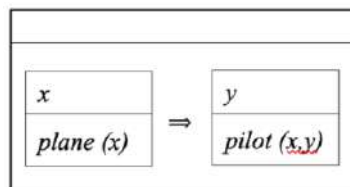
**Figure 6:** Scenario context representation in DRT

If there is a plane x, there is a certain y, who is the pilot of the plane. Thus, we get the enriched discourse context:

10. The plane arrived. The pilot was tired.

discourse context   scenario-context   enriched context
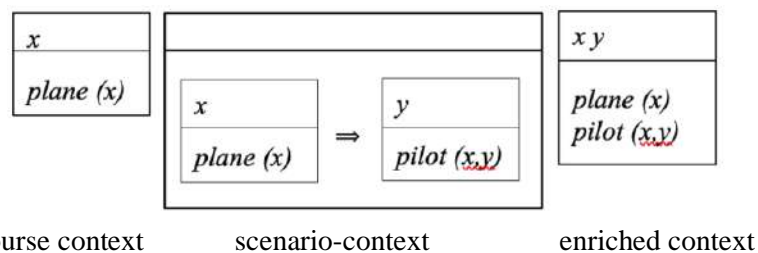
Figure 7: Enriched context in DRT

Owing to such a generalization the second sentence in (10) is illustrated in Fig. 8 in terms of the enriched context.

enriched context   sentence   new discourse context
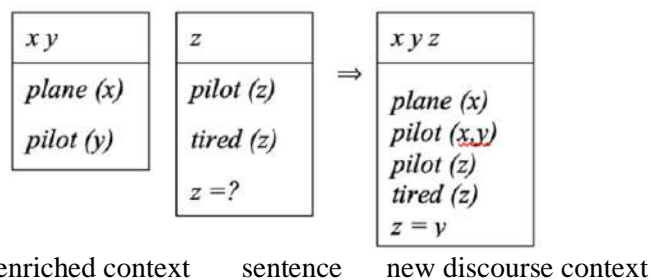
Figure 8: New discourse context in DRT.

Based on this, each discourse referent is tagged on the given-new plane taking into account the extended annotation scheme [30; 33] (Table 1).

Table 1
Assignment of tags in the extended annotation scheme for IS

Layer	Tags	Short description
Information status	giv	given (underspecified)
	giv-active	active
	giv-inactive	inacttive
	acc	accessible (underspecified)
	acc-sit	situationally accessible
	acc-inf	inferrable
	acc-gen	general
	new	non-specific

4. Experiment

4.1. Automated and semi-automated annotation of information structure

Labelling all the relevant constituents for their information status presupposes employing "coreference resolution" [34], which shows whether DP refers back to another element and if so, with what type of link (active, accessible, inferable, non-specific). The computer software that allows DP annotation of the data is called "Cesax". It enables to resolve coreference semi-automatically presupposing that the automatic search is enriched with the possibility to ask the user input in ambiguous cases. Currently the list of DP features is represented by the three members [6], e.g.

GrRole. Subject, Agent, Argument, Oblique, PPobject, PossDet, None and unknown.
NPtype. ZeroSbj, Pro, DefNP, Dem, DemNP, Proper, IndefNP, Bare, QuantNP, unknown.
PGN. 1p, 1s, 2, 2p, 2s, 3, 3fs, 3ms, 3ns, 3p, 3s, unknown, empty.

The search algorithm for new-given information detection is described in Komen [5; 34] and is summarized in 11.

11. Algorithm for DP analysis in a clause
Step 1: Obtain a list of the DPs and PP at the sentence-level.
Step 2: Delete empty PDs from the list and those marked "Inert".
Step 3: Get the number of DPs marked "New", which are unanchored;
If there is 1, it is relatively newest;
If there is more than 1, return the syntactically most prominent;
If there are 0, continue with step 4.
Step 4: Repeat step 3 for NPs marked "Assumed" (in the current study termed "Inferred" – OA).
Step 5: Get the remaining DPs: if there is 1, it is the relatively newest; Otherwise return the one with the largest antecedent distance.

With the commencement of coreference resolution process, the software automatically determines as many anaphoric links as possible, as well as, referentially new DPs (lower-right yellow window in Fig.9) [6]. However, once a solution corresponds to one of the built-in suspicious situations, Cesax stops to ask for the user's decision.
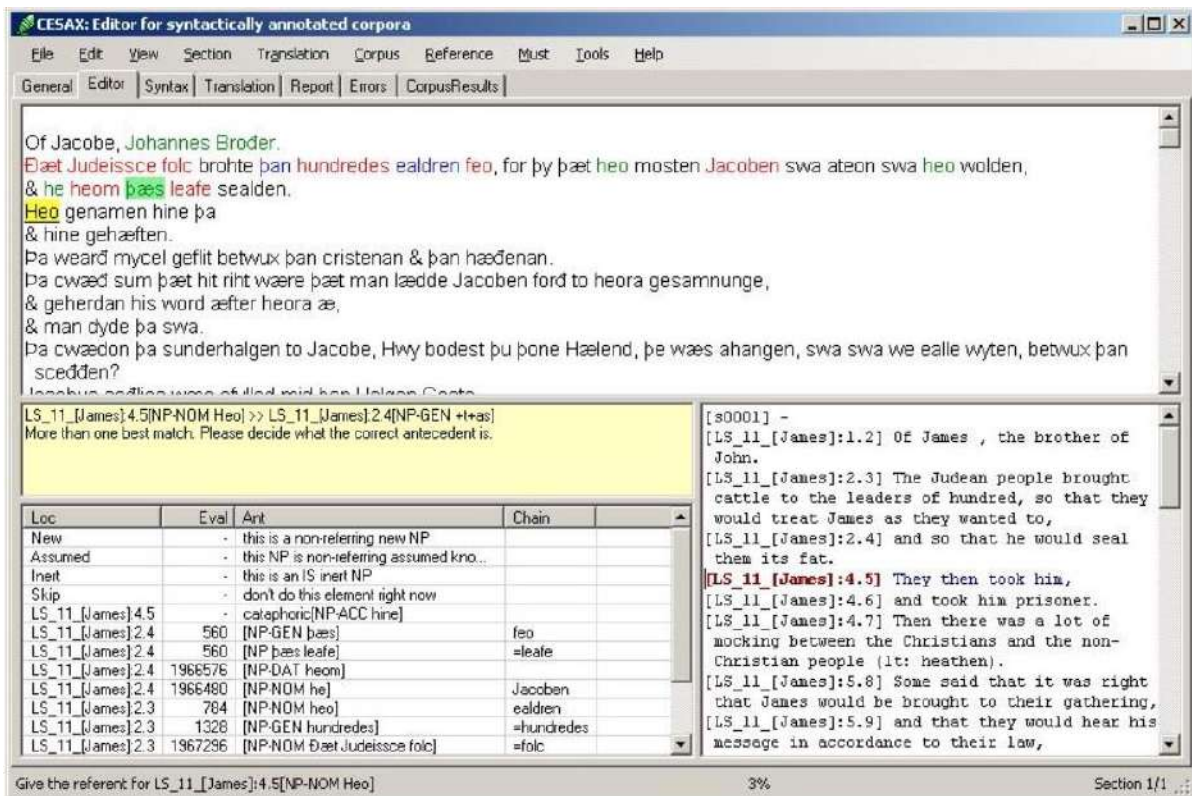
Figure 9: Enquiry for user's judgement once performing coreference resolution procedure

After labelling given-new information in the discourse, the informational status of individual linguistic expressions is further identified in terms of Topic and Focus marking. For the current study Topic and Focus are identified in line with Krifka's [35] and Reinhart's [36] definitions. Thus, the former highlights the information the sentence is about (represented by aboutness, given, familiar and contrastive subtypes), whereas focus is associated with salient or the most important information in the sentence [37, p. 143]. It is further subdivided into informational (a sentence element that stands for a great level of novelty) [38], identificational (refers to the presence of alternatives prior available in the discourse) [39], emphatic (represents the elements that demonstrate the extreme value on the scale of values) [40], exhaustive (renders the exclusion by identification with respect to the alternative propositions), contrastive (the components of the common ground that contain a proposition the sentence can be contrasted against) [41], verum (the truth value of the sentence) [42] and mirative (surprising or unexpected information) [43] Foci. Table 2 summarizes the tags applied to the analysis the second type of dichotomy, viz. Topic/Focus.

Table 2

Assignment of tags in the extended annotation scheme for Topic/Focus

Layer	Tags	Short description
Topic	ab	aboutness topic
	gt	given topic
	ft	familiar topic
	ct	contrastive topic
Focus	inf	informational focus
	idf	identificational focus
	cf	contrastive focus
	emph	emphatic focus
	exhf	exhaustive focus
	vf	verum focus
	mirf	mirative focus

The results of tagging the components are given in Figure 10.

<WORDS>	for	thee	have	i̤		seene	just	before		mee
<IS>		giv-active	new	give-active		new	acc-sit			
<TOPIC>	ab									
<FOCUS>							idf			
<WO>		DOBJ	Aux	SUBJ		V PII	ADV	IOBJ		
<TRANS>	Because I have seen you just before me									

Figure 10: Information structural analysis of the parsed sentence with focusing *just* in EEBO

The abovementioned methodology allows complex tagging of clause components in parsed corpora in regards to information givenness, as well as, identify sentence Topic and Focus and their variations. Such analysis enables to identify the role of a particular focusing adverb when marking sentence Focus or Topic, define its role in correlation of IS and sentence word-order, as well as, explain the grammaticalization mechanism on a specific historical language layer, which provides new quantitative and qualitative insights into the English language development.

4.2. Restrictive Focus Markers in Middle and Early Modern English: Corpora Opportunities and Challenges.

As it has been previously highlighted, the patterns with adverb *just* and its spelling variants are retrieved from two diachronic Corpora, which differ in terms of their size, lemmatization and tagging. *Corpus of Middle English Prose and Verse* is represented by 300 Middle English primary texts collection marked using basic TEL semantics and available for bulk download in XML form [44]. It allows conducting a basic search, proximity search, citation search, etc. (See Fig. 11).

Figure 11: Basic search window of Corpus of Middle English Prose and Verse

The algorithm applied in the current Corpus allows a quick search of the form itself with reference to the author, title of the work and the date of publication. E.g.

Title: A parallel-text print of Chaucer's Troilus and Criseyde from the Campsall ms. of Mr. Bacon Frank, copied for Henry V. when Prince of Wales, the Harleian ms. 2280 in the British museum, and the Cambridge university library ms. Gg. 4. 27. Put forth by Frederick J. Furnivall ...
Author: Chaucer, Geoffrey, -1400.
Publication info: London,: Pub. for the Chaucer society by N. Trübner & co., [1881-82]
→ Search Results: 2 matches in full text
Results details | Table of contents | Add to bookbag

Title: The donet, by Reginald Pecock. Now first edited from MS. Bodl. 916 and collated with The poore mennis myrrour (British Museum, Addl. 37788) by Elsie Vaughan Hitchcock.
Author: Pecock, Reginald, 1395?-1460?
Publication info: London : Published for the Early English Text Society by H. Milford, Oxford University Press, 1921.
→ Search Results: 20 matches in full text
Results details | Table of contents | Add to bookbag

Figure 12: Search results for ME *iust* (just)

This type of search pinpoints the emergence of a specific linguistic phenomenon in the language, as well as, calculates its frequency in a certain period of time. However, further semantic and syntactic analysis of the linguistic form requires manual processing based on peculiar features of a clause and XP structure in order to separate, in our case, adverbial *just* (ME forms *iust(e), just(e)*) from its nominal, adjectival and verbal counterparts.

Early Modern English Corpus EEBO developed by the Text Creation Partnership contains ca. 755 million words in 25,368 texts within the time frame of 1470s-1690s. It has a lemmatization and part of speech tagging, thus, simplifying the query process [45]. The search intends to provide the raw data for two Early Modern English spelling variants *just* and *iust*.

After automated search all the examples with NPs and APs containing *just* are tagged manually (since automated search sporadically fails to differentiate *just* as an adverb or an adjective), which can be observed after conducting the automatic comparative analysis of the collocates (Figure 13).

SEE CONTEXT: CLICK ON NUMBERS (WORD 1 OR 2)   [HELP...]
SORTED BY RATIO: CHANGE TO FREQUENCY

| WORD 1 (W1): JUST (2.76) | | | | | WORD 2 (W2): IUST (0.36) | | | | |
	WORD	W1	W2	W1/W2	SCORE		WORD	W2	W1	W2/W1	SCORE
1	GOING	257	0	514.0	186.5	1	REWARDE	120	1	120.0	330.7
2	JUDGMENT	984	3	328.0	119.0	2	MA	56	0	112.0	308.6
3	RESENTMENTS	138	0	276.0	100.2	3	IUDGEMET	50	0	100.0	275.6
4	FEARS	123	0	246.0	89.3	4	IUDGEMENTES	38	0	76.0	209.4
5	JUDGMENTS	117	0	234.0	84.9	5	REUENGE	285	4	71.3	196.3
6	COMING	105	0	210.0	76.2	6	HEAUEN	31	0	62.0	170.9
7	READY	389	2	194.5	70.6	7	VNDER	59	1	59.0	162.6
8	JUDGEMENT	999	7	142.7	51.8	8	HAUE	26	0	52.0	143.3
9	ESTEEM	138	1	138.0	50.1	9	LAWE	26	0	52.0	143.3
10	PREROGATIVES	69	0	138.0	50.1	10	LIUETH	25	0	50.0	137.8
11	SEVERITY	134	1	134.0	48.6	11	IUDGEMENT	1378	28	49.2	135.6
12	UPON	796	6	132.7	48.1	12	REUENGING	24	0	48.0	132.3
13	ENTRING	65	0	130.0	47.2	13	IUDGEMENTE	21	0	42.0	115.7
14	SOEVER	63	0	126.0	45.7	14	VENGEAUNCE	20	0	40.0	110.2
15	GONE	59	0	118.0	42.8	15	DESERTES	17	0	34.0	93.7
16	PREJUDICE	58	0	116.0	42.1	16	OCCASIO	32	1	32.0	88.2
17	RESENTMENT	216	2	108.0	39.2	17	AUENGER	16	0	32.0	88.2
18	IDEA	53	0	106.0	38.5	18	CONCEIUED	16	0	32.0	88.2
19	JUDG	50	0	100.0	36.3	19	LIUE	16	0	32.0	88.2
20	ABHORRENCE	49	0	98.0	35.6	20	SEUEN	16	0	32.0	88.2

Figure 13: Collocates search for EModE adverbs *just* and *iust*.

It should be noted that such collocates as *just judgement, just fears, iust law* demonstrate that the word *just* functions as an adjective rather than an adverb. Therefore, this Corpus still requires more elaborated part of speech tagging when compared to the parsing algorithm in COCA Corpus [2], which

allows automated search of clusters with reference to part of speech delimitation, as can be seen in Figure 14.

Figure 14: Automated Clusters Representation with adverb *just* in COCA Corpus

Taking this issue into account, the further investigation in EEBO refers to the contextual analysis based on syntactic and semantic criteria. Furthermore, in case of *just* functioning as an adverb, I specifically consider its meaning in the text to check whether it acquires a particularizer or exclusive function characteristic of this adverb in PDE.

To manually differentiate adjectival and adverbial usage of *just* and to avoid ambiguity of data interpretation a special attention is paid to syntactic regularities at every time-frame of under analysis. Taking into account that the adverb entered the English language in the XIV century [22], some specific features of clause structure can be summarized as follows:

1) The language of XIV-XVII century is known as the period of WO normalization with verb-medial turning into a canonical pattern [46].
2) Syntax greater rigidity facilitates the consistent decline of V2 in the English language of XV century [47], as well as, modifications in VP and DP structures [48; 49].
3) Object fronting (OSV sporadically OVS), typical of Early ME, is still characteristic in mid. XVII cen., though it is occasionally used to emphasize the text coherence [50].
4) Classification into parts of speech is more syntactically rather than morphologically triggered and correlates with the word function and its arrangement in the clause [51].
5) Constituents of the DP structure in Late Middle and Early Modern English are similar to those of the Present-Day English language, i.e., nouns and adjectives are frequently differentiated by article implementation though exceptions are still frequent [51, p. 82].
6) Adjectives and participles turn into prototypical modifiers of nominal elements with a noun obligatory used as a head [53].
7) Adjectives frequently require either a dummy head or a pronominal one. [54].

If the DP is compiled of a set of adjectives, the second adjectival element can oftentimes follow the noun [34], as *in a good man and iust*. Once it's a case a dummy *one* can be observed or omitted from the surface structure of the sentence. Therefore, a special attention is paid to DP structure when considering *just* in its adjectival and adverbial meanings in cases when it occupies the position after the noun, given that it can function as an adjective in this period (12).

12. The Lord iust in mydil therof, he shal not do wickidnesse; (The Holy Bible, ME Corpus).

Another line for differentiation for adverb *just* presupposes its contextual analysis as a focusing adverb and other types such as manner and time [40], which is to be done manually. While functioning as a focusing adverb *just* may be used as an exclusive or a particularizer, hence, the next step of the analysis suggests the distinction of specifically these two types based on alternative semantics methodology, viz. Question Under Discussion (QUD) method [35; 55]. It should be noted that the common feature for focusing adverbs lies in their establishing relations between the Focus value and the set of alternatives [56, p. 340]. Therefore, the differentiation of focusing adverbs is made possible with reference to their discourse function, presupposition and descriptive content [44].

Adverbs of an **exclusive type** are aimed at providing a comment on the current question (CQ) that weakens a salient or natural expectation. Hence, taking into account the topicality scale, the antecedent should be weaker than the presupposed answer to the CQ. The presupposition for exclusives implies that they express one of the most likely true alternatives to the current question, which is "at least" as strong as its antecedent on condition that the last is the minimally expected true answer. This schematically can be displayed as follows: $MIN(\pi)$ (where π is an antecedent) [57]. The descriptive value conveys the most likely true alternative for the CQ, which is "at most" as strong as its antecedent and can be represented as $MAX(\pi)$ [58]. Based on the abovementioned, the operators for upper and lower scale can be defined as in (13)-(14) [57, p. 251]:

13. $MIN\sigma(\pi) = \lambda w\forall p \in CQ\sigma\ [p(w){\rightarrow}p\geq \sigma\pi]$

14. $MAX\sigma(\pi) = \lambda w\forall p \in CQ\sigma\ [p(w){\rightarrow} \pi \geq \sigma p]$, where $\geq \sigma$ is a pragmatically given pre-order on the propositions that constitute all the potential answers to the CQ.

Given that *just* may function as an exclusive adverb, its semantic meaning is exemplified in (15)-(16).

15. Presupposition and content of X [just Y] Z
Presupposition: (X [just Y] X) = $MIN\sigma$ ($\parallel$ X Y Z $\parallel^{l}$)
Descriptive content:$\parallel$ X *just* Y] Z $\parallel^{l}$ = MAX σ($\parallel$ X Y Z $\parallel^{l}$)

16. Mongst whom he lives, he lives with warie eyes, that he nor envie rich, nor Poore despise: and with his equals he just equall waighes; nor up, nor down, for fear or favour swaies (EBBO, The historie of the perfect-cursed-blessed man…. 1628).

The traditional content of *just* in (16) and its usage implies a scale over the probable answers to the CQ. Such a scale is reflexive and transitive and should not necessarily be antisymmetric. The presupposition demands from the pre-adjacent to *just* to be the minimum true answer to the current question or in other words to be the least likely true answer expected. The descriptive content suggests that the maximum true answer to the CQ should be no-stronger than the pre-adjacent. Therefore, the latter is not presupposed in advance, however, the QUD rules put forward in Beaver&Clark [57] ensure the presence of true alternative answers to CQ, as well as, the truth of the proposition (*OA*).

The discourse function of **particularizers** confines in expressing identity and specificity. According to E. König [14] and A.-M. De Cesare [59, p. 65] they are used emphatically with their main aim to establish identical relations between arguments in proposition, which are contextually given though do not exclude other possibilities. Based on their presupposition the use of particularizers presupposes that the assertion is related to the greater part of Focus [25, p. 158; 60], with a particularizer emphasizing the validity of the sense but not its own validity compared to other non-valid values [61, p. 158]. In other words, it focuses on the pragmatic implicature of stating that something is true by nature, so two sentence elements can be evaluated as equal. [43, p. 348]. So, as a particularizer *just* can be paraphrased as *'nothing but'* or *'X and only X'* [48]. Thus, the speaker can presuppose the possible alternatives, contrastive meanings, however, when the sentence contains a particularizer adverb this sentence lacks contextual prompts due to the general unnecessity in that. E.g.

17. You look just like your sister.

18. The gyaunt he hyttez Iust to þe genitates (ME Corpus, Morte Arth. (1) (Thrn) 1123, 1440)

Based on the descriptive content the usage of the particularizer *just* indicates that the speaker considers themselves responsible for the CQ [57, p. 74]. The focus value is located low on a pragmatic scale; however, it entails all the (less surprising) values ranking higher on the scale implied [61].

5. Results and Discussions

5.1. Grammaticalization cline for *just* in XIV-XVII-cen. English

ME Corpus data show that the polysemous form of *just* entered ME in ca. 1300s functioning as an adjective (19), a noun (*the ancient Olympic games; A series of single combats*) (20) or a verb (21), as well as, later as an adverb (22).

19. Crist oonys dyede for oure synnes, he iust for vniuste (ME Corpus, WBible (1) (Roy 1.B.6) 1 Pet.3.18, 1384).
20. Þe Grees..accounted here ʒeres by Olympades, þat beeþ þe tymes of here iustes and tornementis (ME Corpus, Trev.Higd.(StJ-C H.1), 1.37, 1387).
21. Þer watz þe kyng kaʒt wyth Calde prynces, And alle hise gentyle forjusted on Jerico playnes (ME Corpus, Cleanness (Nero A.10) 1216, 1400 (?c1380).
22. His hode was juste to his chyn (ME Corpus, Perceval (Thn) 272, 1440).

Analysis of ME Corpus data proves that out of 1022 matches in 63 records the form *iust* is most frequently used as an adjective while the nominal form appears to the least frequent one (See Table 3)

Table 3
Distribution of graphic form *iust* into parts of speech in ME Corpus

Parts of speech	N	V	Adj	Adv
Number of tokens	4	33	978	7
Frequency (%)	0.39	3.23	95.69	0.69

Table 3 demonstrates that *iust(e)* as an adverb despite emerging within the same time frames as its counterparts, viz. Adj, N, V, goes through the process of its early standing, which is confirmed by the low frequency figures in ME Corpus (0.69%). The dominance of adjectival usage can be observed with other spelling variant *just(e)* represented by 268 matches in ME Corpus. However, there is a notable difference in part of speech allotment ratio for this particular spelling form (See Table 4).

Table 4
Distribution of graphic form just into parts of speech in ME Corpus

Parts of speech	N	V	Adj	Adv
Number of tokens	10	52	193	13
Frequency (%)	3.73	19.4	72.02	4.85

Allegedly, the presence of two forms is attributed to dialectal differentiations and lack of graphic standard. Yet, Corpus studies indicate that two different spelling variants may coexist not only in one text separately, but are even traced in the same sentence. E.g.

23. On after trouþ, wan it is don wit just cause, juste ordre, and iust entent (An apology for Lollard doctrines, ME Corpus).

Comparing the data from Tables 3-4, the assumption is made that based on frequency figures the form *just* but not *iust* is more prone to categorial shifts and develops into the dominant adverbial spelling variant in further centuries of the English language evolution. The analysis of the two forms in EEBO presented in Figures 15-16 justifies this speculation.

SECTION	ALL	1470s	1480s	1490s	1500s	1510s	1520s	1530s	1540s	1550s	1560s	1570s	1580s	1590s	1600s	1610s	1620s	1630s	1640s	1650s	1660s
FREQ	142686	0	0	1	4	0	6	1	1	5	2	15	89	96	855	504	1748	7184	14194	25162	17439
WORDS (M)	755	0.7	3.7	2.0	1.3	0.9	3.0	7.1	8.7	7.2	16.1	26.9	32.0	24.1	40.0	42.9	38.6	42.8	47.1	99.5	63.5
PER MIL	188.99	0.00	0.00	0.50	3.11	0.00	1.97	0.14	0.11	0.69	0.12	0.56	2.79	3.98	21.36	11.75	45.34	167.75	301.17	253.00	274.67
SEE ALL SUB-SECTIONS AT ONCE																					

Figure 15: Frequency of *just* in EEBO

SECTION	ALL	1470s	1480s	1490s	1500s	1510s	1520s	1530s	1540s	1550s	1560s	1570s	1580s	1590s	1600s	1610s	1620s	1630s	1640s	1650s	1660s
FREQ	52896	30	40	52	22	28	120	325	873	873	2889	3935	6052	4793	7667	10270	7557	3458	909	972	315
WORDS (M)	755	0.7	3.7	2.0	1.3	0.9	3.0	7.1	8.7	7.2	16.1	26.9	32.0	24.1	40.0	42.9	38.6	42.8	47.1	99.5	63.5
PER MIL	70.06	42.13	10.79	26.10	17.08	29.59	39.44	45.77	100.23	120.92	179.61	146.13	189.39	198.84	191.53	239.39	196.03	80.75	19.29	9.77	4.96
SEE ALL SUB-SECTIONS AT ONCE																					

Figure 16: Frequency of *iust* in EEBO

Figures 15-16 show that the form of *just* is becoming more frequently employed in the text starting from 1600s reaching more than 25,000 tokens in 1650s, hence turning into the dominant spelling variant (cf. *iust* forms are represented by only 972 instances in this time frame), while the ratio for the form *iust* drops sharply onwards of 1630s. The quantitative data analysis, however, requires further qualitative data investigation to clarify the grammaticalization cline for adverb *just* based on automated Corpora figures and manual contextual analysis.

According to the OED [61], as well as, the tokens retrieved from ME Corpus adverbial meaning of *just* arises in 1417 presumably from the adjective *juste*, which has two primary senses: the first meaning of *just* refers to *the persons, the heart, living morally upright, righteous* (24); while the second major sense of *just* refers to *the equitable or fair, fitting proper, conforming to the rules* (25)-(26). Apparently, both major senses of adjective *just* came to English at the same time, which is indicated by ME Corpus entries of 1384.

24. The riȝtwijsnesse of a iust man [WB (2): riȝtful man; L iusti] shal not delyuere hym, in whateuer day he shal synne (ME Corpus, WBible, Dc 369, Ezek.33.12, 1384)

25. If we knowlechen oure synnes, he [God] is feithful and iust, that he forȝiue to us oure synnes (ME Corpus, WBible, Roy 1.B6, John 1.9, 1384).

26. It is iust to me for to feele this thing for alle ȝou, for that I haue ȝou in herte. ((ME Corpus, WBible, Dc 369 (2) Phil.1.7, 1384)

To speculate on the transformation of adjective *just* into an adverb, a special reference should be made to some examples from *Corpus of Middle English Prose and Verse*, where the form under analysis gets a double reading due to the post-modifying placement of the adjective and only the contextual analysis and knowledge of clause structure specifics helps differentiate adverbial and adjectival senses. E.g.

27. The Lord ←iust in mydil therof, he shal not do wickidnesse; (ME Corpus, The Holy Bible)

28. Also the Lord seide to Noe, Entre thou and al thin hous in to the*. [thi I.] schip, for Y seiȝ thee iust (???) bifore me in this genera|cioun. (ME Corpus, The Holy Bible).

The occurrence of such ambiguous examples may testify to the verity of the hypothesis that adverbial meaning originates from the adjectival on account of dual interpretation of the clauses. As has been hypothesized in the paper, the early stages of such transformations involve metaphorical abstractions [23, p. 16]. This hypothesis finds evidence in Erman [62, p. 99], who claims that *just* (*exactly*) has been derived from the adjective with the meaning of *fair, correct, precise*. Overall, 20 entries of adverbial *just* elicited from ME Corpus indicate that the dominant particularizer meaning is associated with the notion of exactness. Hence, the major senses are distributed as follows:

a) in an exact or accurate manner; so as to correspond exactly; with precision; accurately; punctually; correctly (11 examples);

29. We award that fra the sole end of the frunt before in to the streteward, un to the third post on the base stane of Robert of Feriby, be drawen a lyne <u>just</u> and set just Seint Leonard grunde, after that betwix party and party. (ME Corpus, Doc.in Sur.Soc.8511, 1417)

30. I wil..that..myn executours to do remeve seynt Marie awter just to the wal..where as Marie Mawdelyn stondith, and that ymage to be set <u>just</u> ageyn the peleer (ME Corpus, Will Bury in Camd.4938,39, 1463)

b) fittingly, snugly (8 instances);

31. Then his basinet pynnid up on two greet staplis before the breste with a dowbill bokill behynde up on the bak for to make the basinet sitte <u>juste</u>. (ME Corpus, Arms Chivalry (Mrg M 775) 44, 1486)

c) immediately (1 illustration).

32. Graundyneee was the ffirste; He rode oute of tho gatus <u>juste</u>. (ME Corpus, Bevis (Chet 8009) 89/1728, 1500)

Based on these figures, the preliminary conclusion runs as follows: the analysis of data from *Corpus of Middle English Prose and Verse* shows that *just* functions as the adverb only in 20 instances out of 1284 matches in total, while other forms of *iust(juste)* are distributed among adjectives, nouns and verbs. Therefore, the standing of *just* as an adverb starts in ME, undergoing further semantic and grammatical specialization in Early Modern English acquiring restrictive focusing adverbial function [63]. Hence, *just* overcomes extension moving to an open-class category.

Early Modern English findings from EEBO are initially analyzed in terms of frequency while rendering the adverbial meaning by two forms *just* and *iust* with reference to every decade up to 1650s.

Table 5

Adverbial *just* frequency in EEBO

Years	Number of tokens with *just* in EEBO	Adverb *just* occurrence in EEBO	Adverbial Frequency (%)
1480-s	40	2	5
1490-s	53	0	0
1500-s	26	0	0
1510-s	28	2	7.14
1520-s	126	14	11.11
1530-s	326	3	0.92
1540-s	874	17	1.95
1550-s	878	7	0.8
1560-s	2490	44	1.77
1570-s	1615	110	6.81
1580-s	2889	166	5.75
1590-s	1497	142	9.49
1600-s	3000	474	15.80
1610-s	3000	113	3.77
1620-s	3000	81	2.70
1630-s	3000	369	12.3
1640-s	3000	459	15.3
1650-s	3000	555	18.5

The data indicate that *just* is typically associated with an adjective in the years of 1480s-1500s and its functioning as an adverb is limited to 2 instances where it is used in the meaning of *justly* (adverb of manner), therefore the data for this period hardly turn informative. E.g.

33. r he that dothe euylle / euylle he must haue / for Iustly he shall ben punysshed of god / they that done harme and dommage to the poure folke for who so euer rendreth euylle for good / he shalle therof <u>iust</u> be rewarded (EEBO 1484).

The analysis of tokens with *just* in the years from 1510s to 1550s points to their gradual increase in usage per million words reaching the figure of 120.92 in 1550s (particularly for the spelling variant *iust*) (See Fig. 16). The ratio for *just* functioning as an adverb rises to 4.38% also demonstrating adverbial meaning extension represented in Table 6.

Table 6

Adverbial meaning of JUST in 1500s-1550s

exactly (manner)	closely, precisely (location)	amount, number	time	justly (manner)
36,36%	36,36%	13.64%	6.82%	6.82%

Table 6 testifies to development of the polysemantic sense of *just* as an adverb with its dominant particularizer function (*exactly, precisely*). The meaning of *amount and time* rendered by the adverb can also be interpreted as right (*exactly*) characteristic of a focusing particularizer. Significant for this time frame is the rise of meaning *justly* traced with the spelling variant under study, since Middle English records have a specific form *justli (jostle, justle)* first entering the language in 1384 simultaneously with adjective *just*, which served the foundation for adverb *justly* formation [44; 61]. Therefore, the adverb demonstrates further meaning extension untypical for the previous English periods.

The next time frame, viz. 1550s up to 1600s, shows the significant decline in the meaning of *exactly* (*manner*), whilst the number of examples with *just* emphasizing the *amount and time* doubles. Moreover, a new function arises, i.e., *modifying degree and comparison*.

Table 7

Adverbial meaning of JUST in 1550s-1600s

exactly (manner)	closely, precisely (location)	of degree and comparison	amount, number	time	justly (manner)
8.52%	34.81%	2.22%	31.85%	12.96%	9.63%

The distribution for 1600s-1650s (Table 8) shows the abrupt drop of the sense *justly*, whilst the particularizer meaning becomes dominant indicating mostly *location or manner*. Another interesting feature for this period is the emergence of *just* in its exclusive function, which can be replaced by a synonymous construction with *only* (34).

Table 8

Adverbial meaning of JUST in 1600s-1650s

exactly (manner)	closely, precisely (location)	of degree and comparison	amount, number	time	justly (manner)	only (exclusive)
21.8%	36.78%	9.26%	16.08%	13.9%	1.09%	1.09%

34. by the termn bless, so often repeated: and requireed of all degrees, of ministers, the kingdom and of the word and his will, as grace for grace: Hee handleth here gods lenity, mercey and goodnes onely, according to the letters, and also the name iehovah and of his virtue: exo: 33: Ro: 9: the psalme hath <u>just</u> the a b c, number of verses, to shew that of som one letter hee treateth... (EEBO 1629)

Therefore, grammaticalization cline for *just* appears as hypothesized in the Introduction, with exclusive sense of *just* arising in 1620s. Firstly, adverbial specification is limited to highlighting something exact, then *just* goes through the process of meaning extension turning additionally into the adverb manner and time, which allows new senses to enter the domain of *just* in EModE. Moreover, as the examples demonstrate, adverbial sense of *just* significantly prevails after 1600s with the adjectival

usage being still dominant. Thus, the process of *just* grammaticalization as a closed class category is still on its way in EModE, however, after 1620s it starts functioning exclusively as a restrictive adverb.

5.2. Information structure, word order and positional variability of *just*

Middle English examples with *just* annotated with reference to the type of information actualization and sentence Topic/Focus are analyzed according to the methodology highlighted in Paragraph 2 taking into account the specific features of word order. Based on it, the following WO are registered with the tokens retrieved: *SVO←just, OSV just→X, OSv+just→V, SVOV(INF)←just, SV(O)just→X, Sjust→O(X)vV, SvOVjust→V, SvOV just→X*. Considering the limited number of examples to speculate on some statistics the investigation of this time frame, viz. 1417-1490s, is aimed at highlighting the general tendencies of ME period in terms of positional variability of the adverb. Thus, *just* in the postposition to the element it is adjacent to (*SVO←just, S V O V(INF)←just*) (3 examples) tends to be used when the preceding component represents new information and emphatic Focus. In such instances *just* functions as a particularizer meaning *fitting snugly or immediately*. The WO pattern *SV(O) just→X* is registered with X element tagged as acc-sit information and identificational Focus (8 instances), with the only exceptional instance of *just* modifying the sentence object as new information and informational Focus. The clauses with inverted word orders, i.e., *OSV just→X, S just→O(X)vV, SvOVjust→V, OSv+just→V*, are represented by isolated instances in the entire ME Corpus. Characteristic of these patterns is their occurrence in poetic records, hence, the sentence word order may have been affected by metrical requirements, since the information structural analysis shows no regularities in word order differentiations, viz. the element *just* is associated with in *OSv+just→V(X)* pattern is tagged as new information and informational Focus, while in *S just→O(X)vV* pattern the component following *just* conveys situationally accessible information and identificational Focus.

A greater amount of data on information structure peculiarities is available for Early Modern English period, where the figures are analyzed within such time frames: 1500s-1550s, 1550s-1600s, 1600s-1650s. The analysis of word order for every timespan shows that mostly *just* is represented in the patterns where it modifies XPs that follow the verb. This regularity is already dominant for 1500s-1550s. The WO patterns and information types as well as Foci variations are illustrated in Fig. 17.
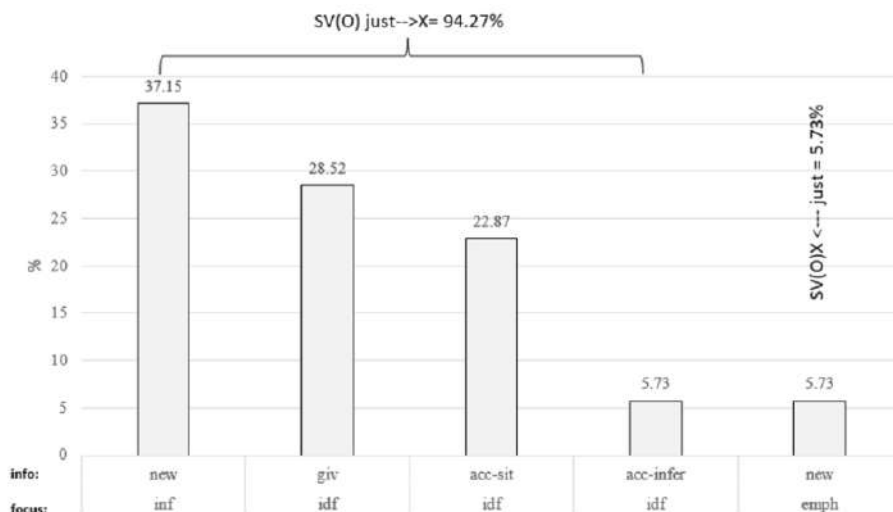

Figure 17: IS and WO Patters with Adv. JUST in 1500-1550s

Figure 17 demonstrates that the post-modifying placement of *just* is registered in the clauses where the adverb is adjacent to the XP conveying new information and emphatic Focus, which notably correlates with ME tendencies for patterns under investigation. Constructions *SV(O) just→X*, where X element represents new information and informational Focus, are typical of *just* as a particularizer marking the *amount* or *time* and very rarely *location*. Whereas with the same adverb highlighting given

or situationally accessible information and identificational Focus the tendency is reverse and XPs pertain to the specification of *location* or *action* (51.39% in total).

The years 1550s-1600s testify to the adverb greater positional variability especially for *just* in post-modifying placement affecting the general word order arrangement. In all these cases the information marked by *just* is represented as new referring to emphatic Focus. Significantly, the number of instances with post-modifying *just* triples in this period (See Fig. 18), which is not the distinctive feature of the next 50-year time frame, since the share for a rigid SVO order rises to 84% with *just* in a pre-modifying position following either the verb or the object (See Fig. 19).
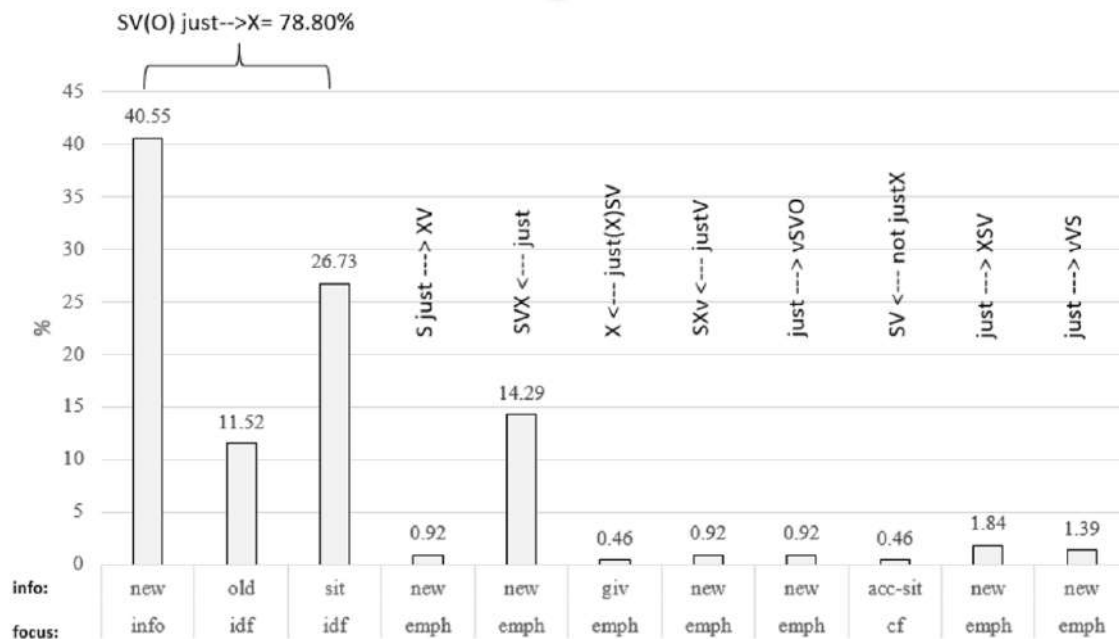

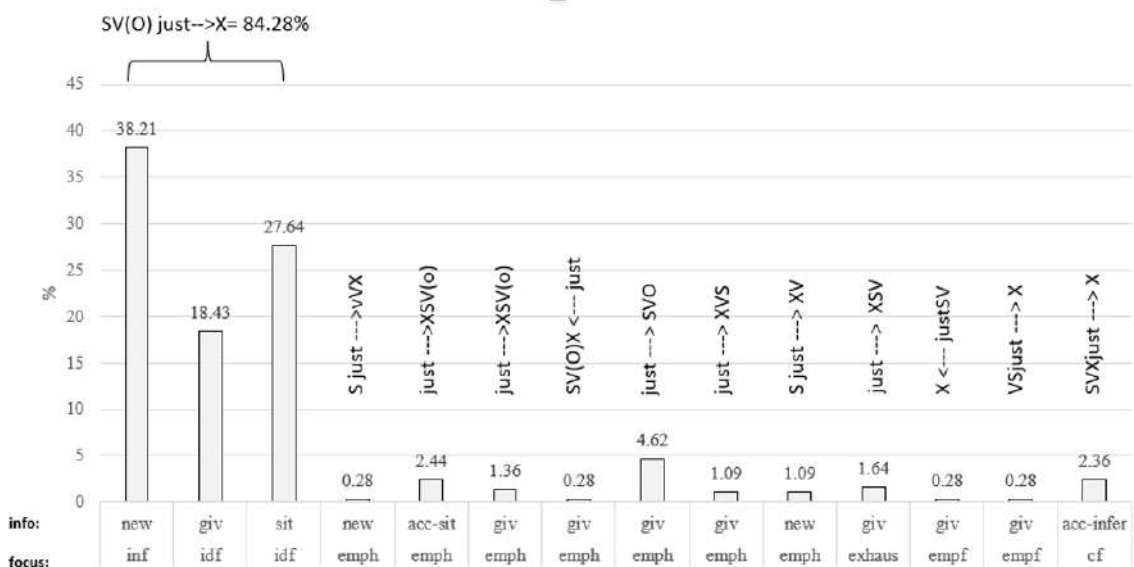**Figure 18:** IS and WO patters with adverb *just* in 1550-1600s.

Figure 19: IS and WO patters with adverb *just* in 1600s-1650s.

The time frame of 1660s-1650s displays a slight reduction of the ratio of marking new information and informational Focus (up to 38%) in the SVO pattern with the redistribution in favor of given information and identificational Focus (18.43%). This fact is evidenced as the crystallization of the particularizer function of *just*. Besides this, the ratio of clauses where the element marked by *just* renders

emphatic Focus significantly arises for both 1550s-1600s and 1600s-1650s time frames with *just* predominantly occupying the first position in the sentence causing inverted WO.

6. Concluding remarks

Corpus methodology investigation suggested provides new insights in focusing adverb *just* analysis relying on automated, semi-automated and manual procedures to study the adverb graphic representation in ME Corpus and EEBO. Quantitative and qualitative data allow assuming that adverb *just* firstly registered in 1417 originates from the adjective due to ambiguous reading in the records prior to this date. Yet, the scarcity of the examples for this time frame fails to provide significant quantitative data on adverb grammaticalization. Therefore, it is assumed that it is not until 1500s that *just* goes through the grammaticalization process extending its original ME sense with the significant rise of adverbial component in 1600s-1650s, which is especially pronounced after the year of 1620. Thus, its initial meaning of *exactly or precisely* is enriched to render nuances of *manner, amount, time, location*, *degree* or *comparison* with further specialization on particularizer functions. Therefore, by 1650 it can already modify NPs, PPs, APs and VPs functioning predominantly as a focusing particularizer adverb, while its exclusive sense typical of PDE *only* becomes evident after 1600s. The quantitative data suggest that the process of *just* turning into a closed class category is still on its way in EModE, since the other non-focusing adverbial meanings are evident in EEBO Corpus till 1620.

The automated and semi-automated Corpus analysis by means of coreference-resolution annotation tool allows investigating WO and IS correlation with reference to focusing *just*, which major function by 1650s becomes marking the identificational Focus and situationally accessible or given information amounting to ca. 46% in total, which is typical of adverbial particularizer. This fact provides further evidence for the adverb grammaticalization. The role of the adverb in information structure highlighting is particularly prominent when it is adjacent to sentence element that represents emphatic Focus and either new or given information, since *just* pre-modifying position significantly affects WO variations causing object fronting in the clause.

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