The "Magic Gathering" of Comprehension Devices

A diachronic systemic functional linguistics analysis of MTG game card texts

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Abstract

This study investigates the diachronic shift of revised card texts in the tabletop collectible card game 'Magic: The Gathering'. The lexicogrammatical patterns found are compared to theories on comprehension and learning, and to the development of the game. To answer how the texts have changed, a sample of twenty cards with old and revised texts has been analysed according to systemic functional linguistics. The metafunctions used for the SFL analysis are interpersonal, ideational and textual. Additionally, a descriptive analysis has been conducted to answer how the changes in the linguistic metafunctions relate to comprehension and development. The analysis shows that there are general patterns within all the investigated metafunctions, which correspond to research on learning, language development and notions on text cohesion. Furthermore, the findings correlate to the game development and functions in the gameplay. While the sample size is limited in comparison to all available cards in the game, the diachronic shifts are distributed over a variety of card types matching the available cards overall, and with the initial interconnections found it is assumed that the patterns are generalisable. Further research could explore the findings in relation to general games development, games as a source of learning or genre and discourses.

Keywords

Systemic Functional Linguistics, Magic: The Gathering, keywords, card text, action, process, mood, transitivity, comprehension.

Contents

1. Introduction

Play is one of the oldest cultural techniques of mankind going back several thousand years. It has been practiced around the world in a great variety of ways for relaxation, diversion, entertainment or competition (Suter, Kocher & Bauer, 2018, p. 19.)

This quote initiates a book on games design systems meant to enhance motivation and meaning. Suter et. al. (2018) explain that a key aspect of understanding and upholding motivation when playing is to have a clear grasp of the rules. Misunderstanding them should be considered a comprehension gap. Vygotsky, a psychologist most famous for his research on learning, also highlights play as being an important part of human learning development and believed that there are no games without rules, no matter how subtle (1978). However, communicating rules in a comprehensible fashion is surprisingly not one of the topics of Suter et. al.'s book. Instead, the research breaks down understanding general game mechanics in relation to meaning-making beyond the textual, not unlike other research within the field.

One game that is particularly interesting in relation to comprehension is 'Magic: The Gathering' (henceforth MTG), an intricate collectible card game from Wizards of The Coast (henceforth Wizards), first released in 1993. Contrary to many other game genres where players need to learn rules and game functions separately from the gameplay, card games tend to briefly describe the functions on the cards themselves, which is the case in MTG. Therefore, the linguistic aspects of these card texts are especially interesting from a meaning-making point of view. MTG has been researched in the same manner as most other games, with aims ranging from analysing social and psychological to programming aspects. Dodge (2018) has conducted a discourse analysis approach to MTG, exploring literary practises. While Dodge (2018) ascertains that some linguistic aspects, such as vocabulary, are crucial for comprehending the game, the overall topic is that the game becomes accessible once the player has acquired sufficient vocabulary to become a member of the community. The comparisons of the social aspects of MTG to other games seem to be the main points of previous linguistic research. The interest for the social aspects is understandable since the current player base is estimated to roughly forty million people internationally (Galov, 2023). Nevertheless, reading the cards is the primary step to understanding the game. Over twenty thousand different playable cards have been released since MTG was launched thirty years ago, and many of them have been revised in newer editions, so for that reason the diachronic shift of the textual features is especially interesting.

The aim of this thesis is to analyse the linguistic features of MTG card texts diachronically according to Systemic Functional Linguistics (henceforth SFL), and relate the findings to comprehension. Previous research tends to fixate on the game genre, despite the cards being a form of written communication like non-game genres. Martin and Rose (2008) highlight the possibilities for identifying diachronic change within SFL, as many other approaches do not differentiate between different forms of realisations of texts within what those approaches consider one genre.

The research questions are:

How have MTG card texts changed over time in terms of lexicogrammatical features? Can potential patterns be understood in relation to comprehension?

2. Theoretical framework and background

2.1 Technical terms and definitions

The term *feature* in the context of this thesis is defined as various linguistic features within SFL. The term *function,* when occurring with *card*, is defined as the intended function of MTG cards; the rules the text conveys and the actions it triggers in the gameplay. Function in this context is closely related to *ability*, the official MTG term for characteristics of a card that allows it to do things, which is conveyed by the card text. Function is also a keyword of the *meta*functions in SFL.

Some official keywords in MTG are highlighted and explained in this thesis due to high relevance for the analysis. Given the vastness of the amount of established keywords used in the game and all information connected to them, the full list will not be attached. All keywords and rule texts can be found on https://magic.wizards.com/en.

2.2 Magic: The Gathering

Within the field of linguistics, there is limited amount of research on MTG and card games in general. Games seem to still be considered one genre, even though the differences between subgenres are enormous. There is however extensive research on the phenomenon of gamification, the application of game mechanics to education (Vijay & Jayan, 2023). Vijay and Jayan have mapped the research field's increase in interest, and confirmed several interconnections that allow for further research (2023). The connection between games and learning appears to be well known, and comprehension is typically conveyed through language processes. Mark Rosewater of Wizards wrote in 2002 that Wizards' goal was to balance the complexity of cards so that both novice and advanced players can fully enjoy the game. Wordiness and rule (text) size and complexity were highlighted as factors, but at that point they prioritised making common cards simple and the more obscure rare.

In order for nongamers to be able to make sense of this thesis, the following overview describes the most basic game play and functions. MTG is a table-top card game, with physical game cards that can be combined in various ways to build a deck to play against other people (see Figure 1). Players take turns going clockwise, starting with seven cards on hand. Everyone goes through a set number of phases during their turn, in which they are allowed to play or activate certain cards and abilities. In the main phases they can for instance play the card type *creature* as long as they have sufficient funds (*mana*) for it. Creature cards are played from the hand and placed on the table (*battlefield).* The *creatures* on the battlefield can attempt to damage the other players in the *combat* phase,

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and the other players can choose to block incoming damage with their own *creatures*. Certain cards on the players hands, and *abilities* of cards already in play, can be played or activated in *instant speed*, as a reaction to what another player is trying to do. Attempting to play a card is called *casting*, where the card (called *spell* during casting) rests on a symbolical *stack*, while all players get a turn-based priority to counter-react before spells on the stack *resolve*. The goal is to reduce the other players' life total to zero, by *combat damage* of creatures or damaging abilities of various other cards. Creatures have a certain strength and toughness; they can do X damage and take X damage. When taken higher damage than their toughness, they are *destroyed (die)*. All cards that have been destroyed, *sacrificed* or not eligible to enter the battlefield, end up in the *graveyard* pile. *Exiled* cards are removed from the game. These game actions, abilities and keywords are connected to the text developments that are exemplified further in this thesis.

2.3 The Systemic Functional Linguistics approach

According to Martin, Knox and Caldwell (2022), applied linguistics has to incorporate the smallest units of text to be analysed in relation to the context in which they appear. The language choices of the smaller units are thus considered important ways of realising meaning that is ultimately understood in the bigger context. It is very clear that Dodge (2018) has taken the context into account in her discourse analysis of MTG, since the article reiterates the in-game vocabulary and what part that proficiency plays in the social context of the players. To understand the effects of small units such as word choices, it is definitely interesting to read about attitudes among people in the community, since the community is a vital part of the context in which meaning is understood. However, in contrast to the approach of this study, Dodge's study is first and foremost located within the higher hierarchies of discourse analysis, and focuses on the community's accessibility for the player depending on their level of vocabulary knowledge. In other words, the analysis jumps straight to a level of abstraction in the outer systems of SFL, which enact social relations (Martin et. al., 2022).

To get a deeper understanding of the systems that are involved in the meaning-making, an SFL approach might bridge the gap between several levels of abstraction, to not only explain personal associations with other players but also explain how the textual aspects affect the players' own comprehension, the assumed intent of linguistic choices and other interconnections. The linguistic metafunctions used in this study are *interpersonal* (mood; relationship between subject and verb), *ideational* (transitivity; processes, participants and conditions the clauses convey) and *textual* (theme-rheme; hierarchies of information flow) (Halliday, 2009). One additional semiotic resource that affects the texts is visual symbols embedded in the clauses of the text. It is not possible within this study to conduct an in depth multimodal analysis, but considering the symbols' importance for reading the text, they are explained descriptively.

2.4 SFL and comprehension

Rose (2018) has applied an SFL approach to the design of pedagogic registers, which relates to MTG since the card texts are ultimately designed to teach the players how to

play the game. Vocabulary for instance is not only a social tool for speaking to other players, but also a relevant lexical feature in relation to how it can affect the player's own comprehension. *Lexical coverage* is a theoretical term within reading comprehension research for the amount of words in a text that are well-known to the reader, and knowing 98% of the words is estimated to be needed to understand the entire text (Hirsch, 2018). Furthermore, Vygotsky's *zone of proximal development* describes what he found to be the optimal learning zone; to learn effectively, a certain level of independent knowledge is needed and used to process new material with the help of supporting devices as scaffolding (1978). This research is admittedly not recent, but vital aspects of the current pedagogical narrative still rely on Vygotsky's notions, which for instance can be seen in Joseph Siegel's *Teaching English in Secondary School* (2022). While the research primarily revolves around language learning, the same research views language proficiency as not only recognising words and knowing their definitions, but also being able to use them in communication in different situations, which is relevant for games (Siegel & Seedhouse, 2019). Vygotsky's research on games as a tool for learning development also explains that all games have rules regulation, and the possible actions and outcomes offered from those rules contribute to facilitating meaning (1978). In terms of learning and playing a game by reading the card texts, the processes involved in comprehension and knowledge acquisition are not that different. Rosewater (2002) understood the importance of the above, he did just not yet know the extent of the connections. To describe what Wizards could not explain in terms of linguistic features, the games development and general learning processes are compared in section 5. Rose (2022) outlines the relationship between learning processes as below:

> The association of features with functions is a social relation, as it arises from a community's shared recognition of recurrent instances. Individuation is a scale of such social recognition, from cultures to communities to personae (Rose, 2022, p.105).

The quote above summarises the stance of Dodge, as well as Suter. et. al.. Dodge's focus is on the culture and personae of gamers and Suter et. al. address game mechanics from the programming and design community's point of view. The stance in this thesis is that personal and generalisable aspects of textual features in games have been overseen. The aim of this study is to analyse MTG card text changes diachronically, identify patterns and attempt to relate those to processes that are involved in learning, across more than a few narrow and highly specialised communities.

3. Methodology

3.1 Data selection

Changes in card texts are a well-known topic within the MTG community, and some players in said community have discussed cards that have undergone changes in relation to game development that they find interesting in online forums. Those forums have been found by typing the search words "MTG card text changes" into the Google search bar, a method for retrieving online data called *search and scroll* (Fyfield, Henderson and Phillips, 2021). From those forum threads, twenty cards corresponding to the main types have been selected in the order in which they appeared, although some cards were skipped

due to the same type being repeated too much for the sample to accurately represent the different available card types. The importance of the types being correctly distributed is that the different types tend to have different functional themes in the game, which ultimately affects the content of the texts. The number twenty allowed for the selection to represent a distribution of the same types in line with the distribution in a standard MTG game, while maintaining the data selection reasonable in size for the scope of the thesis. The printed texts of the cards have been collected from Wizards' own official database 'Gatherer'. For more details of the sample, see Appendix A. While all cards and card texts are available online through various databases, there is no downloadable complete text file to use in a corpus tool. Seeing as this study is qualitative with only a few quantitative elements, it is considered sufficient to analyse a sample of cards that are known within the community for their revisions. The aim is to determine *how* texts have changed, not necessarily how frequent those changes are. Statistical significance tests have been conducted for the most prominent metafunction change, which can provide stronger validity to the indications of generalisability of the patterns, aside from relating patterns to the game functions and development.

3.2 Applied Systemic Functional Linguistics

SFL offers a wide set of tools for linguistic analyses, from which one can apply approaches within the categories relevant to the specific study. In this study, the areas are not only narrowed down in consideration of relevance, but also limitations of the scope of the thesis. It is important to note that analyses within the categories listed below can be applied in great detail to texts. Analysing several metafunctions on a basic level among the varied sample of texts, as in this study, allows for an investigation of the general patterns and development. In contrast, analysing only a few card texts in greater lexicogrammatical detail would consequently mean less room for finding actual patterns and the concept of comprehension in general. Not being able to use a corpus tool makes bigger samples in a study like this impossible.

3.2.1 Interpersonal metafunctions

Mood is a speech/text function used to describe the relation between speaker and addressee, or author and reader, according to interpersonal grammar (Matthiesen & Halliday 2009). Analysing the form of the verb phrases and relating them to the other phrases in clauses, provides indications of the intended function of the text, as in what the author wants to achieve by the clause as well as what is asked from the reader (for instance question-answer, instruction-action). The card texts have been separated into verb phrases, which in some cases make up the whole clause. Then, the verb form has been identified according to the feature categories *imperative* and *indicative*. The imperative feature is realised by the verb appearing in base form, and though the assigned position of a potential subject precedes the verb, it is omitted and therefore implicit. Indicative is realised by a verb in finite form plus an explicit subject, although there are instances where the subject is positioned in the beginning of a clause followed by several enumerated verb phrases. Indicative verb phrases have been further categorised depending on whether the subject precedes or follows the verb, with *declarative* phrases realised by the subject preceding the verb and *interrogative* the other way around

(Matthiessen & Halliday, 2009). This level of depth is the limit for this study. The mood in older card texts has been contrasted to revised texts, to see if the there are any general structure changes happening that can be further discussed in relation to the role of the player and the role the card text has in conveying meaning. Mood is the metafunction change that has undergone a significance test, see 4.1.

3.2.2 Ideational metafunctions

The relevant aspect within ideational metafunctions is transitivity. Transitivity describes the processes conveyed by syntactical choices, with different categories for determining what processes different participants are involved in and under what circumstances (Matthiesen & Halliday, 2009). The clauses have been separated, and the phrases have been categorised accordingly. The textual processes have been compared to the processes in the game play because the card information is meant to be directly transferrable to the actual game actions when playing. Transitivity is related to mood – the verbs and their relationship with the subjects are further examined in relation to what role they play in the clause. For instance, "sacrifice a creature" contains a verb in imperative; the mood shows that the author is commanding the reader to do something. The ideational function of the verb is material; the *process* is to perform an *action* (to sacrifice). The syntactical object and *goal* of the process is the succeeding noun phrase (a creature). The subject, or *actor*, would syntactically precede the verb, but since the phrase is in imperative form, it is implicit ([you] sacrifice a creature) (Matthiesen & Halliday, 2009). These relationships have also been related to *overlexicalisation* in section 5 (Machin & Mayr, 2012).

3.2.3 Textual metafunctions

The third metafunction approximates a higher hierarchy than the former, and is meant to connect the two in order to guide the reader in interpreting the text. The systems used to do this are *theme* and *rheme*, and they define the textual statuses of the phrases in a clause. Theme and rheme have thus been identified in the clauses, compared within each card and then contrasted diachronically according to the following definitions. Theme is the starting point of the information provided; it highlights the topic of the clause. Rheme is then used to describe the theme (Matthiesen & Halliday, 2009). Theme and rheme are most commonly linear; the rheme of a clause takes the position of theme in the subsequent clause. They can also be constant or derived, where the same theme is repeated in the clauses, respectively comes from subordinate units (Dejica-Cartis & Cozma, 2013). These structure choices affect cohesion and coherence of texts, which are factors that Dejica-Cartis and Cozma (2013) found to affect comprehension – hence the relevance for this thesis, not only by the way they connect mood and transitivity.

Furthermore, the findings within these metafunctions have been discussed in relation to learning, comprehension and instantiation; how they connect to the higher hierarchies (Bednarek & Martin, 2010). Meaning according to SFL is understood when the "recurring patterns of meaning across instances as text types" (p.17) are defined as systems of meaning, in parallel with that of the genre or register (Bednarek & Martin, 2010). Therefore, the patterns within the smaller units of the data need to be put into the wider perspective of the game functions as a system.

4. Analysis

The lexicogrammatical analyses have been conducted by examining the realisations of different metafunctions. The printed cards in full are available as images on 'Gatherer', but below is an example of how the card 'The Hive' looks in an old and a revised edition:

Figure 1. 'The Hive', old card from Limited Edition Alpha set respectively revised from 30th Anniversary Edition set.

Several multimodal features appear on the cards, including colors, texts, pictures and symbols. The feature that has been the basis for this study is what Wizards defines as *card (rules) texts*, the texts positioned in the lower halves of the cards. The only non-textual feature that has been described in addition to the textual analysis is the symbols that sometimes appear directly in the card text, such as 🅒 and ⑤ above. Given the location of these symbols and the narrow field of this occurrence's semantic context, the symbol cannot be interpreted in the same manner as for instance the card art. The symbols are positioned within the text and resemble the preciseness of mathematical symbols as a part of written text, but here the knowledge needed to understand them solely comes from MTG. 🅒 is defined to read: "tap (*this permanent*) to", which means that the card has to be physically turned (tapped) sideways in order to activate its abilities, to show that the card has been temporarily exhausted until the player's next untap step (Comprehensive Rules, 2023, ¶107.5). ⑤ reads "pay 5 mana of many color (*to activate ability*)". Due to this, they are considered part of the card text and will be treated as a such throughout the analysis. The text in parenthesis is a *reminder text*, lacking game function. Wizards does not consider them a part of the card text, which is the target for this analysis (Comprehensive Rules, 2023, ¶207.2a). However, their existence is briefly discussed in

section 5. The last text is a *flavor text*, an artistic addition of lore (Comprehensive Rules, 2023, ¶207.2b), which can be compared to the choices of picture art in the upper halves of the cards.

One general diachronic change that has been identified in the sample, independently from the metafunctions, is a decrease in word count in the revised card texts, primarily through reduced sentence length as well as amount of sentences. The old sample texts consist of 736 words in total, respectively 292 words in the revised, equalling a 60% decrease. Initially, this creates a subjective sense of less overwhelming information flow, as the gaze is directed to fewer highlighted elements, such as keywords, symbols and card types. A graph of MTG releases with text complexity and keyword density is attached in Appendix B. It cannot be used to look at diachronic shift of revised cards, however, it shows a correlation between complexity and keywords used. What this might entail is further discussed in section 5, in relation to the following metafunctions.

4.1 Interpersonal metafunctions

All card texts have been separated into phrases, which have been categorised according to mood. The overall distribution results have been compiled as following:

Table 1. Total amount of verb phrases in old versus revised texts, with mood distribution.

	Old texts	Revised texts
Verb phrases (Qty)	112	65
Imperative verb phrases (Qty)	29	39
Imperative verb phrases (%)	26%	60%
Indicative verb phrases (Qty)	83	26
Indicative verb phrases (%)	74%	40%

These results can be further understood through examples of extended analyses of the phrases in the card texts from Figure 1 and the card 'Bazaar of Baghdad' with comments, as follows below:

Table 2. Categories of mood in 'Bazaar of Baghdad' card texts. Old text highlighted in red and revised in green.

Bazaar of Baghdad

Tap to-	Imperative	
take two cards from your library-	Imperative	
-after which you *must* immediately *discard* three from your hand to your graveyard.	Indicative	Declarative
If you *don't have* three or more cards in your hand-	Indicative	Declarative
-*discard* your whole hand.	Imperative	
No spells *may be cast* between drawing and discarding cards.	Indicative	Declarative
		Imperative: 3 / Indicative: 3
🄲: (tap to)	Imperative	
Draw two cards-	Imperative	
then *discard* three cards.	Imperative	
		Imperative: 3 / Indicative: 0

The old card text has three indicative verb phrases in declarative form; the subject precedes the verb and the clause provides information. The verb phrases in the other three

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clauses are in imperative; the verb is in base form, the subject is implicit and the relation promoted by the clause is a prompt (Bednarek & Martin, 2010). The revised text has no indicative verb phrases. The symbol ⊙ is located at the beginning of the text, aligns with the clause and the translation is identical to the first phrase in the old text. The textual meaning is as relevant as any other explicit phrases, hence the choice to include the translation in the analysis. Moreover, the placement of the symbol provides the reader with a consistent flow of information regardless of this being another semiotic resource. 'The Hive' is another example of the pattern with removed indicative verb phrases and symbols taking the position of a verb phrase:

Table 3. Categories of mood in 'The Hive' card texts. Old text highlighted in red and revised in green.

The Hive		
⑤: *(pay* 5 mana of any color)	Imperative	
Creates one Giant Wasp, a 1/1 flying creature.	Indicative	Declarative
Represent Wasps with tokens-	Imperative	
- (making sure to) *indicate* when each Wasp is tapped.	Imperative	
Wasps *can't attack* during the turn created.	Indicative	Declarative
Treat Wasps like artifact creatures in every way-	Imperative	
- except that they *are removed* from the game entirely-	Indicative	Declarative
-if they ever *leave* play.	Indicative	Declarative
If the Hive *is destroyed*-	Indicative	Declarative
-the Wasps *must* still *be killed* individually.	Indicative	Declarative
			Imperative: 4
			Indicative: 6
⑤, (*pay* 5 mana of any color)	Imperative	
ⓒ: (*tap* to)	Imperative	
Put a 1/1 Insect artifact creature token with flying named Wasp into play.	Imperative	
			Imperative: 3
			Indicative: 0

The old text contains six indicative verb phrases and four imperative. The revised text has only three verb phrases in imperative, including the symbol translations. The definition of ⓒ and ⑤ is provided under Figure 1, and leaves the translations in imperative as well.

The realisation of mood in the revised card texts showing fewer occurrences of indicative phrases than the old is a general pattern of the whole data sample. As seen in Table 1, the distribution percentage of indicative verb phrases in the old texts is 74%, compared to 40% in the revised texts. In order to indicate if this decrease can be explained by the decrease of phrases in total, or by chance, an inferential statistics test (T-test) for two dependent means has been carried out to calculate the significance value (P), which indicates the likelihood that the differences in scores are factual (http://www.socscistatistics.com):

Table 4. Statistics figures of indicative mood distribution

	Indicative old	Indicavite revised
Mean	4,15	1,3
Median	3,5	1
Mode	3	0
Standard deviation	2,73	1,52
T- test significance	P = 0.00005	

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The T-test shows a P-value of 0.0005, which means that the decrease of indicative verb phrases between the old and revised card texts is <u>highly</u> significant; it is very unlikely that the changes are incidental or accidental. The diachronic change in distribution of imperative verb phrases is not significant enough to determine a definite pattern, with a P-value of 0.056, which is slightly above the significance mark (0.05). However, the higher frequency of imperative verb phrases in the revised category is mentioned in section 5.

4.2 Ideational metafunctions

The ideational metafunction describes which actions, participants and circumstances are involved in the text through *transitivity*. The vast majority of the clauses belongs to the material process category, the process type that communicates what someone/something is doing and to whom (Matthiessen & Halliday, 2009). The processes simply revolve around the player or game items as the participant *actor*, *material processes* depicting what they can, may or have to do, with *goals/patients* and *circumstances* adding more detail. Some other findings are for instance existential processes, such as "<u>there is</u> no limit to size of your hand", and the relational "(equipped creature) <u>has</u> trample and lifelink". The existential process was found in an old card text, and has been revised to "skip your discard phase", which is a material process where the player is prompted to skip the game phase where the player would normally discard any excess of cards down to seven in hand before ending their turn, instead of informing the existence of an exception from the legal card limit (Comprehensive Rules, 2023, ¶514.1). There is no substantial diachronic shift in process types, but the amount of processes communicated follows the pattern of reduced amount of sentences in revised card texts. There are however differences in participants and circumstances. Below is an example using 'Bazaar of Baghdad':

Table 5. Transitivity in 'Bazaar of Baghdad' card text. Old text highlighted in red, revised text in green.

Old text

[you]	Tap to take	two cards from your library-	
[actor]	Process=action	goal	
after which	you	must (immediately) discard	three [cards] from your hand to your graveyard.
circumstance	actor	process=action, (range)	goal
(If) you (don't)	have	three or more cards in your hand-	
actor (circumstance)	process=action	goal	
[you]	discard	your (whole) hand.	
[actor]	process=action	goal (range)	
(No) spells	may be cast	between drawing and discarding cards.	
(range) goal	process=action)	circumstance	

Revised text

[you]	Draw	two cards
[actor]	process=action	goal
[you]	(then) discard	two cards
[actor]	(range) process=action	goal

As shown in 4.1, the old text consists of several clauses with indicative and imperative verb phrases, while the revised text only has phrases in imperative. Every clause in the texts describes material processes. The biggest difference between the clauses follows the same pattern as mood; the subject of the verbs are actors of the corresponding processes, and since imperative phrases have implicit subjects, the same applies to transitivity, consequently showing a decrease in actor participants (Matthiessen & Halliday, 2009). In

'Bazaar of Baghdad', all the actors (explicit or not) are referring to the player. The material processes correlate with what kind of game function can or will be carried out depending on the player's choice of actions, except for "if you don't have (…)". The verbs that correlate with the game functions are *tap*, *discard*, *cast* and *draw*, all established keywords in the MTG glossary (2023). All processes have goals, the logical direct objects of the actions. In this example the goals are the cards that the player (actor) tap, discard or draw. The exception is the action *cast* with the goal *spell*. Spell also refers to cards, however in MTG the cards are called spells while being cast (Comprehensive Rules, 2023, ¶112.1). Although the motion of playing a card by moving it from the hand to the battlefield only takes a second in real time, attempting to cast a spell allows for extensive player interaction as explained in 2.2, hence the nuanced terminology.

4.3 Textual metafunctions

Halliday (2014) explains that *theme* in English is indicated simply by its first position in the clause. Theme marks what is considered most important in a clause, according to the theory that communication is messages between speakers and addressees, to which the addressee of a message is provided with different options in response. The genre of the messages these card texts convey is first and foremost instructional. Additionally, many texts (especially on the revised cards) are very short, making it impossible to conduct a substantial generalised analysis of theme-rheme relationships throughout a longer piece of running text. However, there are a few important findings.

Table 6 shows the most prominent change in the theme-rheme structure:

Table 6. Theme and rheme of old and revised 'False Summoning' and 'Bazaar of Baghdad' card texts.

False Summoning, old text

Play False Summoning	only in response to another player playing a creature.
That creature card	has no effect,
and that player	puts it into his or her graveyard.
Theme	**Rheme**

False Summoning, revised text

Counter	target creature spell.
Theme	**Rheme**

Bazaar of Baghdad, old text

Tap	to take two cards from your library,
after which	you must immediately discard three from your hand to your graveyard.
If you don't have	three or more cards in your hand, discard your whole hand.
No spells	may be cast between drawing and discarding cards.
Theme	**Rheme**

Bazaar of Baghdad, revised text

Draw	two cards,
then discard	three cards.
Theme	**Rheme**

The theme of the old texts highlights the subjects/actors and circumstances, while the rheme contains information about what actions/processes can or must be carried out by them/it, and why/when. Whereas in the revised texts, the processes the specific card offers take the theme position, highlighting the game function of the card, with the objects/goals and circumstances in rheme position providing further details. This is a pattern that can be seen throughout the majority of the analysed data. Table 7 relates to the notions of Dejica-Cartis and Cozma (2013):

Table 7. Theme-rheme of old and revised 'Oubliette' card text.

Oubliette, old text

Select a creature	in play when Oubliette is cast
That creature	is considered out of play as long as Oubliette is in play.
Hence the creature	cannot be the target of spells and cannot receive damage, use special powers, attack, or defend
All counters and enchantments	on the creature remain but are also out of play
If Oubliette	is removed, creature returns to play tapped.
Theme	**Rheme**

Oubliette, revised text

When Oubliette	enters the battlefield, target creature phases out until Oubliette leaves the battlefield.
Tap that creature	as it phases in this way.
Theme	**Rheme**

In the old 'Oubliette' text, the theme-rheme relationships are constant and derived. The theme of the first sentence in the old text is also the theme of the two subsequent sentences, while the theme of the last sentence can be found in the rheme of the first. In the revised text, the rheme of the first sentence functions as theme in the subsequent sentence, which is the linear structure that Dejica-Cartis and Cozma (2013) have found to improve comprehension of texts. Even though many of the texts in MTG are very short, a lot of cards interact with each other, so the theme-rheme of one card text consisting of only a single clause may very well correspond to the theme-rheme of a completely different card. For instance, the creature 'Brazen Freebooter' reads: "*When Brazen Freebooter enters the battlefield, create a Treasure token*". Another creature named 'Goldspan Dragon' reads: "*Treasures you control have 'Sacrifice this artifact: Add two mana of any color'*". Even though these are two separate cards, the theme treasures of 'Goldspan Dragon' corresponds to the treasures mentioned in the rheme of 'Brazen Freebooter' in the same linear manner as the revised text on 'Oubliette'.

5. Discussion

The research questions revolve around how card texts have changed over time, and if the changes can be understood through theories on comprehension. An initial pattern, as mentioned in section 4, is the 60% decrease in word count in the revised sample texts. The visual effects of the content in the text boxes in Figure 1 being less cluttered makes the whole card easier to quickly get an overview of, and the text is less overwhelming to read, just like Rosewater expressed the goal to achieve back in 2002. He also explained a

restriction in fonts for this very reason; 'microtexts' (small and cluttered) are difficult to read, therefore only rare cards are allowed to have smaller font than nine points. The remainder of the semiotic items and their placement on the cards have not changed diachronically, apart from aesthetic aspects like colors and card art. Rose (2018) describes pedagogic interaction with the features attention, perception and knowledge. Building on *attention* as a comprehension device, the attention of the player is drawn to the smaller units of text. The card being designed to draw this attention, helps the player in their *perception* of the units so that they can comprehend the card, in other words acquire the knowledge to relate the units to higher levels of instantiation. These pedagogic features align with SFL theory of what makes meaning. This initial pattern is further understood through examining the underlying structures, in relation to the pedagogic systems which are derived from semiotic ones (Rose, 2018).

One such underlying structure is the significant changes in mood. The declarative mood, subcategory of all identified indicative verb phrases, signals the stating of facts as information, and the transitivity analysis shows that these facts function as circumstances for the processes. The recurrent use of symbols in some card texts, another structure change, always translates into a phrase in imperative mood, with the verb process corresponding to game actions offered to the player. In imperative mood, the player is primarily the implicit subject/actor of such processes, which means that when prompted to do something, the player is not considered a necessary textual participant, highlighting the action instead. The subjects of the declarative verb phrases have shown to be either the player or other players and items within the game. In revised texts, this form is generally used when the transitivity describes what happens if the player has already opted to engage in a process offered by a prompt. The prompt, looking at the circumstances and context, seems to be an offered cause to a desired effect, so the same processes are offered to the player without excessive phrases such as "you may/can/must pay X to" or "activate this ability by", which creates ambiguity and incoherence when phrased differently on different cards. The choice to use symbols and/or imperative follows the pattern stated in 4.1 and 4.2; short phrases in imperative, containing established keywords as action verbs instead of longer declarative texts with varying lexical choices focused on conditions regarding the isolated card rather than the function the card offers. *Reminder texts* are declarative, but primarily occur when a keyword is new or uncommon (Wizard of the Coast, 2023). This strengthens the indication that longer descriptions are excessive and phase out as the game develops and players learn.

Establishing keywords, and the choice to draw attention to certain lexical items, is further understood through textual metafunctions. Machin and Mayr (2012) describe the term *overlexicalisation* as when certain words or phrases are used in abundance, or for excessive descriptions, to draw attention to certain things. The old texts clearly have excessive descriptions of circumstances, which can easily make the player overlook the general game functions and the cards' interaction possibilities, due to the attention to the isolated card. The revised texts however, with their recurring imperative phrases, rather draw attention to key game functions in a clear and concise fashion. Machin and Mayr found that the effect of overlexicalisation of imperative verb phrases can "bring a sense of energy and forthrightness and above all confidence and authority" (2012, p. 47), which

also describes the effect of the revised texts. The theme of the clauses with imperative verb phrases being the verbs that correspond to the game action offered to the player, highlights that action. Even in the revised texts in declarative mood, the theme tends to be the actor that is either the player or the card, with the process followed at the beginning of the rheme. In the old texts, the theme is oftentimes the circumstances, or an actor in form of a participant taking the subject position despite in fact functioning as a target of the process carried out by the player, creating obscurity. Rose (2020) highlights the need for recognition to be able to effectively understand something, so using a recurrent pattern of the main process or it's actual actor in theme position, directs the attention toward the main game functions and brings a sense of coherence. The linearity is upheld not only by the rheme being theme of the subsequent clause, as Dejica-Cartis and Cozma (2013) described, but also by the consistency in conveying cause first, and effect later.

Overlexicalisation and recognition are concepts related to the consistency that keywords bring. How can the word count of a card be reduced to such a degree found in this study, while still conveying the same meaning? To understand this, the linguistic changes have to be compared to the game. For example, the keyword *token* in the revised 'The Hive' (Figure 1), is defined by Wizards as:

> Tokens are always permanents, and they're affected by all the rules, spells, and abilities that affect permanents. If one of your tokens leaves the battlefield, however, it moves to the new zone (such as your graveyard or your hand) and then immediately vanishes from the game (Keyword Glossary, 2023).

By *token*, it has been specified that the creature created by activating 'The Hive's ability follows the same rules as other permanents, as stated above. Therefore, there is no need to include additional declarative phrases telling how to later treat and kill that creature. An official rule called *summoning sickness* states that permanents cannot be tapped if they came into a player's control after that player's last untap step (Comprehensive Rules, 2023, ¶302.6.). In order for a creature to attack, it must be tapped, thus leaving the sentence declaring that it cannot attack the turn created redundant. Representing 'Wasp's with external tokens is no longer applicable; they <u>are</u> tokens. All the processes and circumstances above are entailed in the card type that 'The Hive's ability can create. In this example, using *token* leaves four of the five original sentences completely redundant. They draw the attention away from the one simple game feature 'The Hive' offers, while also creating confusion by repeatedly using 'Wasp' as an actor in theme position on 'The Hive', even though 'Wasp's (and other tokens) have their own functions independent from 'The Hive'. After the keywords token, tap and flying were established, recognising them were simply enough to comprehend the function of 'The Hive'. The graph in Appendix B shows that even though some launches in modern times may still be complex, the amount of keywords used spikes whenever there is a small rise in complexity, so it is clear that they keep the complexity average down. Unlike the launches from the 90's, where the complexity is always higher than the low average of keywords.

Regarding the patterns' effect on comprehension, parallels between research on learning development, learning the game and developing the game can be drawn. In the Vygotskian zone of proximal development, the term scaffolding is used to describe

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devices that help the learner reach new levels of knowledge. One such device within MTG is the recurrence of keywords and the consistency of choices in realising the metafunctions, such as the order of information flow. This helps to understand how the cards interact with other cards or players as a system, defined as "an accumulation of past instances and a resource for potential re-instantiation" (Rose, 2020, p.3). If a player does not yet know what a keyword entails, they can learn from their peers or by looking it up, and quickly return to the game to put the newly acquired knowledge into action. The information flow and keywords also help the player to get an overview of the other player's cards on the battlefield. Furthermore, developing the game and revising cards that draw attention away from the cards' place in the game as a whole, is a developmental process in itself. The older card texts are written in a chaotic manner, with meticulous descriptions of all processes that specific cards might affect, blurring the lines between cause, effect and gameplay. The more organised structure of revised texts shows that the game actions precede the situational circumstances, and acknowledges that items and actions are connected to each other while still maintaining the integrity of the card. The game development and features involved in effective learning have simply aligned, in a similar manner as Vygotsky described as: "consequently a complex of originally underdeveloped features comes to the fore at the end of play development- features that had been secondary or incidental in the beginning occupy a central position at the end, and vice versa" (1978, p. 103). He believed that play contains all processes of development, while also being a development source itself.

6. Conclusion

First and foremost, there are diachronic lexicogrammatical differences in the data sample, with patterns like theme-rheme positions, mood distribution and transitivity. Clearly, there are limitations in time, space and amount of cards. Diving deeper into the metafunctions and comparing texts to other genres would be interesting to further investigate the effects of linguistics. Despite this, the patterns are telling when related to the development of MTG. Due to the sample containing a variation of card types, and the nature of the patterns discussed, there is no indication that the changes would not be reflected on a larger sample of revised cards, nor that new releases does not follow the communicative choices made for the revisions, although a corpus study would help refining the patterns.

Secondly, the findings are related to learning and comprehension processes. Interestingly, the processes seem to not only be located within players, but also game development. The goals that Rosewater expressed in 2002 seem to have been achieved in ways Wizards were unaware of. Closer analyses could answer new questions regarding their consciousness of how linguistic features affect learning. While writing this thesis, a new edition of 'Dr Who'-themed cards was launched. The launch introduced completely new game functions, resulting in the comeback of heavy reminder texts. Unfortunately, this could not be included in this study, however it provides interesting opportunities for further research, and if anything falls in line with the conclusions made here regarding longer descriptive texts being redundant unless occurring with new keywords/functions.

Despite longer texts, this launch is made understandable by using the patterns of highlighting the most relevant game functions, especially to players like me who has acquired an average lexical coverage of around 98%. As any player in my community would say when questions arise: "reading the card explains the card".

References

Bednarek, M. & Martin, J. R. (2010). *New discourse on language: functional perspectives on multimodality, identity, and affiliation.* London: Continuum.

Caldwell, D. (2020). *Appliable Linguistics and Social Semiotics: Developing Theory from Practice.* London: Bloomsbury Academic.

Comprehensive Rules. (2023). Retrieved from https://magic.wizards.com/en/rules.

Dejica-Cartis, D., & Cozma, M. (2013). Using Theme-Rheme Analysis for Improving Coherence and Cohesion in Target-Texts: A Methodological Approach. *Procedia - Social and Behavioral Sciences*, 84, 890–894.

Dodge, A. M. (2018). Examining Literacy Practices in the Game Magic: The Gathering. *American Journal of Play*, 10(2), 169–192.

Duffy, O. (2015, July 10). How Magic: the Gathering became a pop-culture hit – and where it goes next. *The Guardian*. Retrieved from https://www.theguardian.com/technology/2015/jul/10/magic-the-gathering-pop-culture-hit-where-next.

Fyfield, M., Henderson, M., & Phillips, M. (2021). Navigating four billion videos: teacher search strategies and the YouTube algorithm. *Learning, Media & Technology*, 46(1), 47–59.

Galov, N. (2023). How Many People Play Magic: The Gathering in 2023? *Web Tribunal*. Retrieved from https://webtribunal.net/blog/how-many-people-play-magic-the-gathering/.

Halliday, M.A.K. & Matthiessen, C.M.I.M. (2014). *Halliday's introduction to functional grammar.* Abingdon, Oxon: Routledge.

Hirsch, D. (2018). *Learning Vocabulary. The Cambridge Guide to Learning English as a Second Language*. Cambridge: Cambridge University Press.

Keyword Glossary. (2023). Retrieved from https://magic.wizards.com/en/keyword-glossary.

Machin, D. & Mayr, A. (2012). *How to do critical discourse analysis. A Multimodal Introduction*. Los Angeles: Sage.

Martin, J. R., & Rose, D. (2008). *Genre relations: mapping culture*. London: Equinox.

Matthiessen, C. M. I. M. & Halliday, M. A. K. (2009). *Systemic Functional Grammar: A First Step into the Theory.* Beijing: Higher Education Press.

Rose, D. (2018). Pedagogic register analysis: mapping choices in teaching and learning. *Functional Linguistics*, 5(1). Berlin: Springer Berlin Heidelberg.

Rose, D. (2020). Designing pedagogic registers: Reading to Learn. In D. Caldwell, J. Knox & J.R. Martin (eds.) *Developing Theory: A Handbook in Appliable Linguistics and Semiotics.* Bloomsbury.

Rosewater, M. (2002, February 25). Rare, but well done. Retrieved from https://magic.wizards.com/en/news/making-magic/rare-well-done-2002-02-25-0.

Siegel, J. & Seedhouse, P. (2019). Conversation analysis and classroom interaction. In: *The Encyclopedia of Applied Linguistics.* Hoboken: Wiley Blackwell.

SumNeuron. (2021, February 8). A Basic Metric of Complexity Creep. Retrieved from https://commandersherald.com/a-basic-metric-of-complexity-creep/.

Suter, B., Kocher, M. & Bauer, R. (2019). *Games and Rules: Game Mechanics for the »Magic Circle«.* Bielefeld: transcript Verlag. Retrieved from https://ezp.sub.su.se/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=edsebk&AN=2962192&site=eds-live&scope=site.

Vijay, M., & Jayan, J. P. (2023). Evolution of Research on Adaptive Gamification: A Bibliometric Study. *International Conference on Circuit Power and Computing Technologies (ICCPCT), Circuit Power and Computing Technologies (ICCPCT)*, *2023 International Conference On*, 1062–1070. https://doi-org.ezp.sub.su.se/10.1109/ICCPCT58313.2023.10245165.
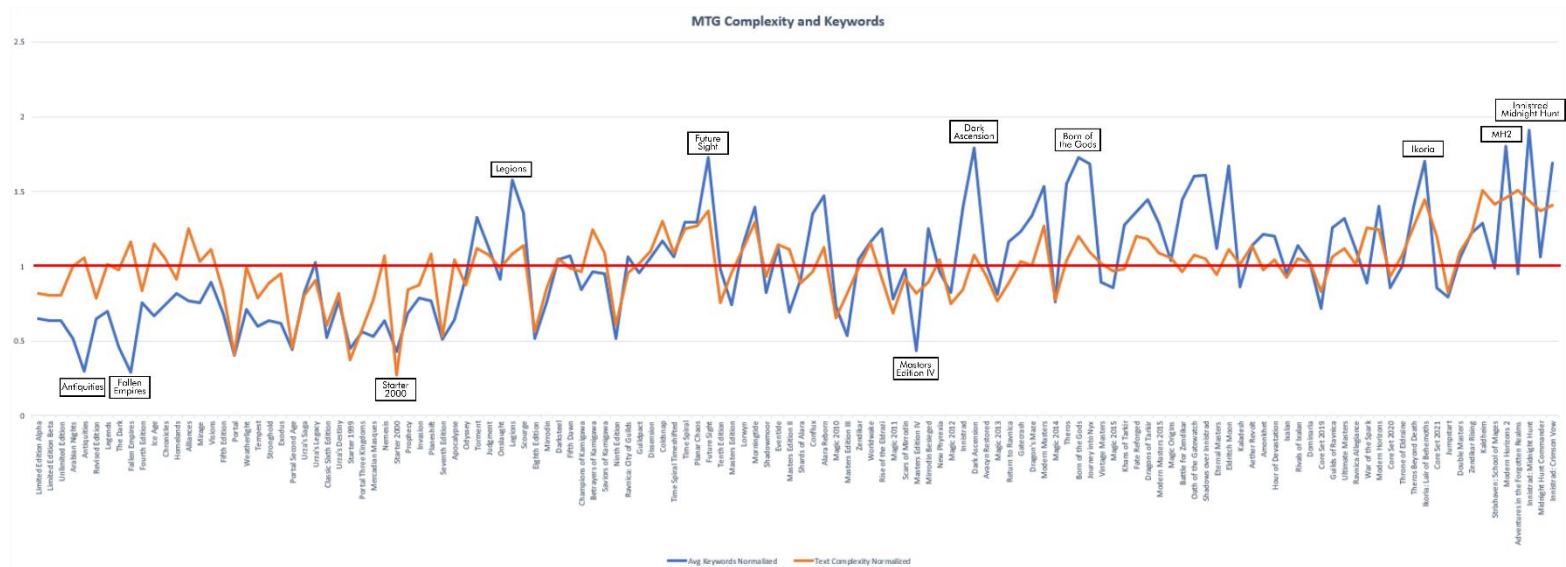
Vygotsky, L. S. (1978). *Mind in Society: Development of Higher Psychological Processes.* Cambridge: Harvard University Press.

Appendix A

Card name	Card type	Date of launch old/revised	Amount of words/symbols old	Amount of words/symbols revised	Keywords (written) in revised
Sage of Lat-Nam	Creature	1994/2018	53/0	6/1	Sacrifice, Draw
Atog	Creature	1994/2003	49/1	7/0	Sacrifice
Teysa Orzhov Scion	Creature	1993/2019	33/0	22/0	Sacrifice, Exile, Token
Control Magic	Creature	1993/2022	42/0	6/0	Enchant
Kormus Bell	Artifact	1993/2022	37/0	9/0	-
The Hive	Artifact	1993/2022	61/1	11/2	Token, Flying
Ashnod's Altar	Artifact	1994/2023	36/0	4/2	Sacrifice
Bottle of Suleiman	Artifact	1993/2011	84/1	37/1	Sacrifice, Token, Flying
Library of Leng	Artifact	1993/2022	45/0	32/0	Discard, Graveyard
Basalt Monolith	Artifact	1993/2023	37/0	12/5	Untap
Millikin	Artifact-creature	1993/2023	18/1	4/2	Mill
Loxodon Warhammer	Artifact-equipment	1993/2023	18/1	9/1	Trample, Lifelink, Equip
Lightning Bolt	Instant	1995/2022	10/0	8/0	-
Blue Elemental Blast	Instant	1993/2022	13/0	10/0	Counter (spell), Destroy
Oubliette	Enchantment	1993/2020	65/0	23/0	Phase out, Tap
Animate Dead	Enchantment-aura	1993/2022	43/0	66/0	Enchant, Sacrifice
Wrath of God	Sorcery	1993/2023	9/0	7/0	Destroy, Regenerate
False Summoning	Sorcery	1998/2011	28/0	4/0	Counter (spell)
Tidal Surge	Sorcery	1997/1999	9/0	8/0	Tap, Flying
Bazaar of Baghdad	Land	1993/2014	46/0	7/1	Draw, Discard

Appendix B

This graph shows the MTG card releases from Limited Edition Alpha (1993) to Innistrad: Crimson Vow (2021). The blue graph shows the average amount of keywords used in the card texts from the releases, and the orange shows an estimated average of the text complexity. Text complexity is an estimated number based on the amount of words, reminder texts and possible interactions (SumNeuron, 2021).