It's not rocket science: on the birth and propagation of the idiom

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Introduction

1   The term *phraseological unit* represents a general concept which covers all formulaic or fixed phrases, such as proverbs, proverbial expressions, proverbial comparisons, literary quotations, greeting formulas, twin formulas, idioms, clichés, and phrasal superstitions (Mieder [2004: xiii, 133]). The origin, history, meaning, structure, dissemination and use of these units are among the most frequently explored aspects in phraseological publications. Although aspects such as birth[1] and propagation have been studied more intently in *paremiology*, or proverb studies (see Trench [1861]; Taylor [1934]; Hulme [2007]; Mieder [2015]; Villers, Mieder [2017]; Villers [2022]), than in other fixed phrases, these aspects prove equally relevant in the case of all phraseological units (hereafter PUs). The subject matter of the present study is concerned primarily with idioms, which are a special class of multilexemic expressions. Moon [1998: 3−5] stresses the ambiguity of the term *idiom* and lists different (often conflicting) ways in which it had been used (a point also made by Everaert *et al.* [1995: 3] and Kispál [2014: 230]). Still, the term is generally taken to represent "formally complex linguistic expressions whose meaning is not derivable from that of their constituents" (Lipka [1992: 96]). Since they represent a subclass of *phraseological units* or *phrasemes* (Mel'čuk [1995: 168]), the same methodology which is used to study the birth and propagation of proverbs could be employed in the study of these stages in idioms (*phraseme genesis*). In fact, just as proverbs, idioms display a neurocognitive complexity[2] (Villers [2020: 114]) and are a "persistent feature of language" (Everaert *et al.* [1995: 1−2]), which makes them an equally interesting and relevant area of study.

2   The older the PU, the harder it is to establish its origin, which is why Villers [2016; 2022] suggests that modern PUs should be studied in large corpora. This fact directed our attention to a relatively modern idiom – *it's not rocket science*, primarily because the modern rocket science, or the science of designing rockets (i.e. spacecraft), is of a more recent date (1926[3]). Consequently, the earliest use of the idiom is more likely to appear on the Google Books N-gram Viewer. Three out of five online editions of dictionaries (*Cambridge Dictionary*[4], *Oxford Learner's Dictionary*[5], and *Collins Dictionary*[6]) list the linguistic expression as an idiom. The label is not explicitly stated in *Longman Dictionary of Contemporary English Online*[7], but the stretch is given under a single heading. In the case of *Merriam-Webster*[8], the example sentence is given under the noun entry "rocket science". Still, all of the online editions offer the same formal definition which says that the idiom is "used to emphasize that something is easy to do or understand" (*Oxford Learner's Dictionary*). So as to explore how the expression gained the status of an idiom, we rely on the criteria proposed by the *model of phraseme genesis* which we detail in the next section.

1. Methodology

3   The process of phraseme genesis has been broken down by Villers [2016; 2018; 2022] into five stages. The proposed model includes the memetic approach (Heylighen, Chielens [2009]) which centers on "self-replicating cultural units" termed *memes*. Namely, the principles described by the memetic approach, which concern the way information is transferred among individuals, serve as the basis for explaining phraseme genesis and propagation. The schematic outline of the stages is offered below (Figure 1). Although this particular example concerns the process of obtaining proverbial status, the stages of *phraseme genesis* have been adapted from *proverb genesis* in Villers [2020: 121].

Figure 1. The stages of proverb genesis and proverb replication (taken from Villers [2022])
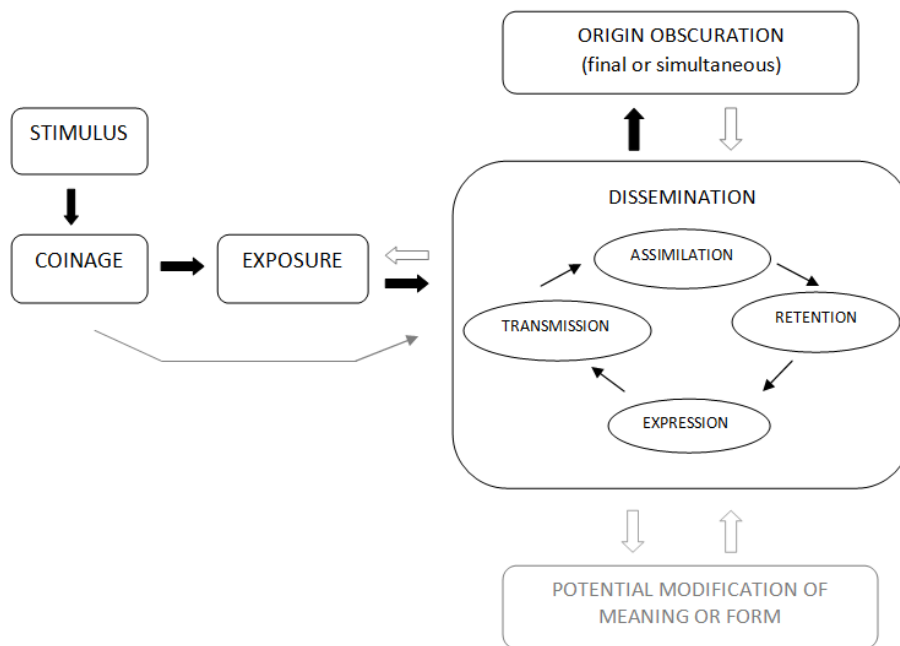
4   According to the model, the *coinage*[9] of a phrase (or a phraseme) is triggered by a certain situation that acts as a *stimulus*. A *mass propagating agent* (e.g. a public speech or a movie) enables it to be exposed to a large number of human hosts (*exposure* stage). The phrase is then repeatedly used by people (*micro-propagating agents*) during the *dissemination* stage, it is noticed, understood and accepted by them (*assimilation*), memorized (*retention*), used (*expression*) and transmitted through a medium (*transmission*). It becomes a proverb (or a phraseme) during the *origin obscuration* stage when it is no longer associated with its creator (Villers [2022: 8]). Each stage may affect the overall process differently, either by speeding up the process, delaying it, or blocking it entirely. Such is the case with the "I am become death" example. Despite the renewed interest[10], it currently has little potential to become a proverb candidate for several reasons. The most recent propagating agent of the expression, the movie *Oppenheimer* (2023), makes mention both of the source, the Hindu scripture the Bhagavad-Gita, and its most famous propagating agent, J. Robert Oppenheimer, who is sometimes wrongly taken to be the man who coined it. This tendency is reflected in the citations found in COCA: "As Robert Oppenheimer once said, 'Now I am become death, the destroyer of worlds'" or "A movie of J. Robert Oppenheimer's famous Now I Am Become Death quote." Out of the 19 citations in a billion-word corpus, 17 contain reference to the source, while in the remaining two the line is uttered by a character in a movie who realizes the disastrous effects of their actions. The corpus shows that the web (7), movies and TV shows (4), news (3), books (3), and blogs (2) are its main propagating agents. The low frequency of the saying and the fact that its propagating agents often do not erase the origin and identity of the famous user indicate that it still remains a famous quotation. However, given that corpora do not contain data after the year 2019 and that the movie is recent, it is hard to make strong claims about the full effect that the most recent propagating agent had on the quote. Still, based on the currently available data, it is safe to assume that its phraseme genesis has little potential without origin obscuration, or the final stage of the model. By following the

same model, the present study will explore the stimulus that has led to the coinage of the idiom *it's not rocket science* (Section 2) and its primary propagating agents (Sections 3 and 4), leaving aside the other stages of the process.

2. The birth of the idiom

5   A quick Google search suggests that the idiom started to be used in the 1980s to describe the difficulties in coaching football. Specifically, it is said that it was coined in the Pennsylvania newspaper *The Daily Intelligencer* in 1985[11]. In order to confirm the earliest recorded use of the idiom, we contrasted the online corpus COCA and the Google Books N-gram Viewer. The former displays the pattern provided in Table 1.

Table 1. The frequency of use of the idiom through the years

	SECTION NAME	# PER MILLION	# TOKENS	# WORDS	
2	2014	0.50	12	24,087,093	■
3	2001	0.41	10	24,446,361	■
4	2011	0.39	10	25,636,361	■
5	2007	0.32	8	24,690,690	■
6	2003	0.32	8	25,185,875	■
7	2016	0.30	7	23,695,797	■
8	2009	0.29	7	24,082,494	■
9	2010	0.29	7	24,082,934	■
10	1997	0.28	7	24,644,381	■
11	1998	0.28	7	25,037,330	■

Source: Corpus of Contemporary American English (COCA)

6   COCA suggests that the idiom first appeared on October 15th 1990 in the magazine *U.S. News & World Report* (Vol. 109, Issue 15) under the title "Send in the clowns". From the expanded context it becomes clear that it was used as an idiom at this stage since the text discusses tax rates, not rocket science:

> Watching the nation's leaders in inaction, it might be hard to believe that there's a pretty sensible – and politically passable – deal to be struck to end the budget impasse. Here it is: Cut medicare payments to doctors and hospitals and raise payroll taxes on the well-to-do; lower capital-gains taxes and increase tax rates on the wealthy. This is not rocket science. It would give President Bush and Democrats each something they care about, and it would require that they give up fighting against something that irks them.

7   The period between 1990 and 1994 marks the lowest use of the idiom exemplified by 8 citations (see Table 2 below), the majority of which still appeared in magazines, in texts that discussed economic issues. We skimmed through the 340 citations in COCA and noticed that it was used as a general principle because it was never limited to the field of rocket science, but denoted any action that is deemed easy to accomplish or understand (for instance: connecting with millennials, understanding insurance rates, the rules of a sport, government policy, or racket-stringing). It was even occasionally preceded by metalinguistic comments such as: "as somebody might say", "X likes to say", "you know", or "you know how they say", which further supports the claim that it was used as a fixed expression (FE). Regarding the importance of metalinguistic comments, Schmale [2009] notes that "by producing metalinguistic comments and evaluations of FEs, participants more or less explicitly display their attitude towards the FE employed, as well as their interpretation of type and communicative function(s) in different contexts".

8 　A search on Google Books (Figure 2 below) shows no hits prior to the year 1871 and the frequency was extremely low (0.0000000041%) between 1871−1877. A slight increase is observed for the year 1944 (0.0000000171%) which lasted until 1950 (0.0000000449%). The N-gram further shows that the idiom started to gain currency in 1987 (0.0000000899%), it displays a sharp and steady rise until 2012 when it reached its peak (0.0000111711%). Despite the slight rise in 2017 (0.0000105725%), the frequency has been on decline since 2012[12]. Since this corpus does not contain scanned books after the year 2019, it remains unclear whether this drop in popularity continued.

Figure 2. Frequency curves for the idiom on Google Books N-gram Viewer
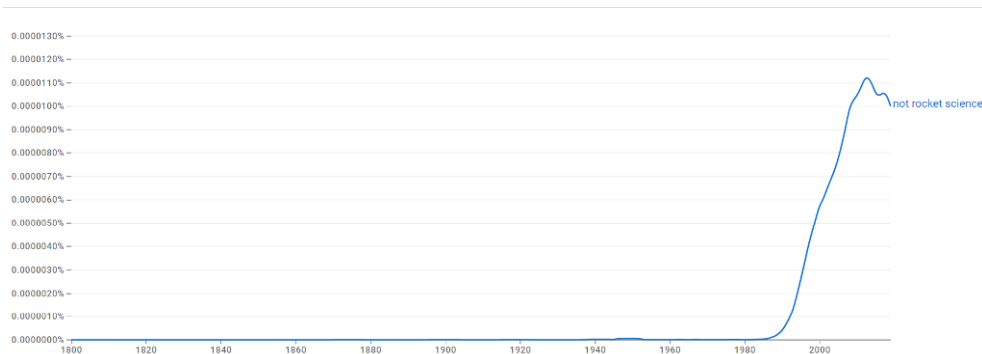
Source: own research

9 　We checked the Google Book corpus for these relevant points, specifically the year 1871, the period between 1944−1950, and 1987−2012 in search of the potential sources and main propagating agents. Interestingly, our search did not, in fact, match any book results for the year 1871, the stretch was still not used as an idiom at that stage since its constituents did not form a fixed phrase. The period between 1944 and 1950 displays a common use of the compound *rocket science*, but there was still no trace of the idiom. The compound appeared in scientific journals, i.e. it still belonged to the domain of science.

10 　The first record of the idiom appears on August 3rd 1987 in the magazine *Network World*, in the article titled "DEC exec offers insights to plans", and is used in two passages:

> One of the reasons you hear so much about LU 6.2. is that it's something new for IBM. It is not new for Digital. Digital has been doing it for 12 years. It's not rocket science, folks.
> You can treat a T-1 line as nothing more than a bunch of 64 KB channels, and those 64 channels could be coming from anywhere. Some could be coming from a telephone circuit, and others could be coming from a Digital VAX. And you could multiplex them over the same physical wire. That's not rocket science. People do it all the time.

It then appeared in the book *Asbestos Control: A Guide for Management* in the same year:

> The project monitor should determine the number of negative air machines needed for each enclosure. The calculations are not rocket science – let's do the math for the enclosure shown in Fig. 75.

While still outside the domain of rockets, it nonetheless remained within the field of science. The examples which we find in COCA corpus that relate to more universal themes (such as parenthood) were not yet present.

11 　The year 1989 shows a gradual transition to the domain of military as the idiom started to be used more progressively in its present-day meaning with a broader application

(e.g. to describe the duties of an infantry officer's job, the qualities of an expeditionary soldier, or to explain arms control). In April of the same year it was even used in an ad for Merit cigarettes in the magazine *Spy*. From 1990 we see a more widespread use in other fields such as finance, (fiber-optic) industry, and e-mail systems. It began to appear in the fields like sport, medicine, psychology, media relations, and education in the early 2000s. There is, therefore, a noticeable detachment from mechanical spheres.

12　The earliest recorded use found in COCA was not found in the Google Books corpus. Since the 1987 entry precedes the COCA entry, it can be treated as the first recorded use of the idiom which marks its birth. However, the date that is readily available online (1985) suggests that the idiom is even older than that, but there were no matching records neither in COCA nor Google Books for the example sentence that is often provided: "Coaching football is not rocket science and it's not brain surgery. It's a game, nothing more". This fact points to potential limitations of online corpora when it comes to detection of certain phrasemes.

3. The various media of propagation

13　Detecting the main propagating agents of a phraseme is easier with online corpora which already contain such information. COCA, for instance, contains 340 citations for the form "not rocket science", most of which come from blogs, the web, TV series and movies:

Table 2. The distribution of the idiom across different genres and through the years

SECTION	ALL	BLOG	WEB	TV/M	SPOK	FIC	MAG	NEWS	ACAD	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19
FREQ	340	101	78	42	36	4	35	32	12	8	19	33	29	44	28
WORDS (M)	993	128.6	124.3	128.1	126.1	118.3	126.1	121.7	119.8	121.1	125.2	124.6	123.1	123.3	122.8
PER MIL	0.34	0.79	0.63	0.33	0.29	0.03	0.28	0.26	0.10	0.07	0.15	0.26	0.24	0.36	0.23
SEE ALL SUB-SECTIONS AT ONCE															

Source: Corpus of Contemporary American English (COCA)

Table 3. The distribution of the idiom across different subgenres

1	TV:Game	4.44	3	675,684
2	TV:Misc	3.95	1	253,323
3	Blog:Legal	2.36	1	423,009
4	Blog:Info	1.83	1	547,695
5	Web:Arg	0.98	54	54,970,418
6	Blog:Arg	0.97	67	68,736,491
7	Web:Misc	0.80	13	16,183,490
8	Blog:Revw	0.76	4	5,257,498
9	Blog:Prom	0.74	2	2,702,404
10	Mov:Docum	0.73	5	6,893,034
11	Blog:Misc	0.67	22	32,935,088

Source: Corpus of Contemporary American English (COCA)

14　Both COCA and the Google Books corpus indicate that magazines served as the primary (i.e. first) propagating agent of the idiom. However Table 2 and Table 3 show that they were not the main one, that role has been assumed by blogs. A corpus such as COCA can also provide answers as to the target audience, which in turn has the potential to act as secondary propagating agent in the dissemination process. Such a picture could be

obtained by looking at the subgenre and the concordances in those sources (Villers & Mieder [2017: 397]). For the idiom *not rocket science*, we could postulate, based on the dominant (sub)genres, that it is primarily used by younger audiences.

4. The propagating boosters of the idiom

15   The success of phraseme genesis is facilitated by certain features, termed *propagation boosters*. These include: "*Distinctiveness*: how different the proverb is from other 'competitors'; *Ornatus*: the aesthetic or stylistic appeal of the proverb; *Veracity*: the degree of truth contained in the proverb; *Conformity*: the compatibility of the message with the host's beliefs / emotions; *Simplicity*: the clarity of the proverb and its message; *Expressivity*: how easily and quickly the proverb can be uttered; *Novelty*: the degree of modernity and perceived 'freshness' of the proverb; *Utility*: the pragmatic potential of the proverb, its usefulness; *Aptness*: how relevantly the proverb is used in context; *Publicity*: the reach of the proverb, and the number of hosts in contact with it; *Repetition*: repeated contact of the host with the proverb; *Authority*: the weight and prestige added by the creator or user" (Villers [2022: 9−10]). The application of these criteria can show the likely reasons behind the successful genesis of the idiom.

16   The idiom has a synonym — *it's not brain surgery* with an identical surface structure and the exact same meaning: "used to emphasize that something is easy to do or understand" (*Oxford Learner's Dictionary*). This could have reduced its replication rate because the *brain surgery* variant is too similar. We checked the N-gram for the *rocket science* variant against that of *brain surgery*, this we show in Figure 3.

Figure 3. N-gram comparison of *not rocket science* (blue) and *not brain surgery* (red)

Source: own research

17   Here we see that the number of hits for the *brain surgery* variant is significantly lower, this suggests that the *rocket science* variant is fitter (in the sense of Villers [2022: 9]) than its counterpart. The frequency curves show a steadier growth which started to decline around the same time (in 2012). In addition, the synonym's status of an idiom is attested by three (*Cambridge Dictionary*, *Oxford Learner's Dictionary* , and *Longman Dictionary of Contemporary English Online*) out of five dictionaries, and it occurs far less in COCA. Namely, there are only 57 citations for *not brain surgery* (as opposed to 340 for *not rocket science*), the main propagating agents of which are TV (0.11, or 14 citations), magazines (0.08, or 10 citations), and news (0.07, or 9 citations).

18   All 340 hits for the idiom *it's not rocket science* that are found in COCA show that it appears in exactly this form, suggesting that it is a relatively fixed idiom. However, it does allow occasional modifications with adverbs: "Go on, you can do it. It's not exactly rocket science, is it?" (*Oxford Learner's Dictionaries*). The online edition of *Cambridge Dictionary* adds the comment "humorous" to the formal definition of the idiom. When used to comment on actions and processes that are far from its basic meaning, it is even easier to notice and memorize, such is the case with sentences like: "Parenting is not rocket science". In fact, when it comes to the formal aspects of the idiom, we see that it represents a case of negation of a form of hyperbole. Norrick [2014: 17] comments that absolute modifiers and adverbs (like *no*, *never*, *all*, and *always*) point to the fact that an expression involves an overstatement. From a lay viewpoint, it could be argued that the idiom does contain a message which is objectively true, since most people consider the science of designing rockets a challenging field. The idiom is even frequently used as an argument that is followed by an explanation of how a particular problem could be solved. Therefore, when such a statement is negated, it becomes clear that the pragmatic effect of the idiom in context is typically related to irony.

19   The conformity criterion could be the major factor that hinders the potential of the idiom to propagate. The degree of conformity with the beliefs of the general public could vary depending on the claim, since people's ideas on the degree of difficulty of certain tasks varies in accordance with their capabilities. Therefore, it is probably more likely to be used among people that share the same beliefs. Given its length, it is easier to process cognitively, to memorize, and to use. Due to the advancements in space exploration, the theme of the idiom remains relevant. Our overview of the corpus examples proved that the idiom is applicable to a wide variety of everyday situations, some of which are very far from its domain of origin. It is because of its broad definition which includes the indefinite pronoun "something" and which applies equally to entities, actions, and processes, that it displays a considerable degree of aptness. However, dictionary entries alert the language user that it is "informal". The use of "folks" in one of our previously stated examples points to this fact. Such clues could have an effect on the user's perspective on aptness and they could explain the predominant use of the idiom in less formal contexts. The idiom relies on a number of propagating agents (see Table 2 above), primarily those with the potential to reach a wider audience (that is, blogs, the web, and TV / movies), and it is not attributed to any individual in particular.

Conclusion

20   In the present study, the phenomenon of *phraseme genesis* has been observed in the case of the idiom *it's not rocket science*. The schematic representation of this process is provided below:

Figure 4. The stages of phraseme genesis and propagation for the idiom *it's not rocket science*
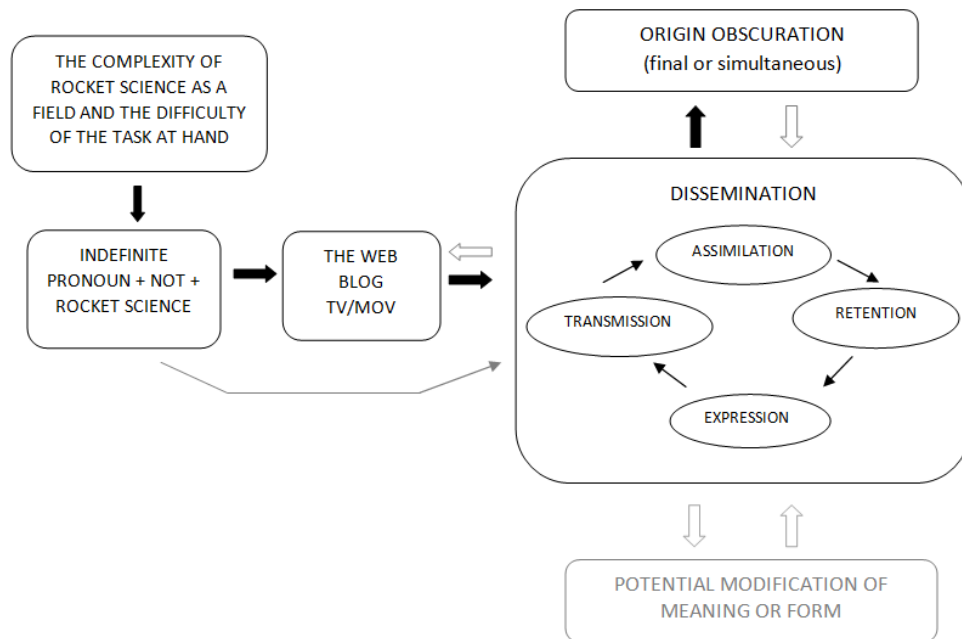
21   Special attention has been given to its birth and propagation, and the analysis produced some interesting results. Namely, it showed that the trace of the origin of the idiom had to be done by consulting more than one source, mainly because the earliest recorded example found in COCA proved not to be the indicator of the actual birth of the idiom. Such a conclusion was reached after a more careful analysis of the frequency lines on the Google Books N-gram Viewer, this data leads us to believe that the idiom started being used in 1987. From that moment on, it found its application in a variety of fields, and became progressively less science-oriented. Yet both corpora failed to produce a match for the frequently cited example from 1985 which is taken to be the first known use of this idiom.

22   The main reasons for its successful propagation were determined by observing the *propagating boosters.* By these criteria, it owes its success mostly to its intrinsic qualities such as *distinctiveness*, *ornatus*, *veracity*, and *utility*, and partly due to the features that focus on the host's point of view including *novelty*, and *expressivity*, as well as its reliance on various propagation agents. Conversely, *conformity* and *aptness* have been observed as potential obstacles to its propagation process because the former is a gradable phenomenon and highly dependent on the speech community, while the latter depends on the formality of the situation, and the idiom *it's not rocket science* is fairly informal. Nevertheless, the study showed that idioms could be dealt with in the same way, that is, by applying the model of *phraseme genesis.*

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Corpora

Davies Mark, *Corpus of Contemporary American English (COCA)*, Brigham Young University: https://www.english-corpora.org/coca/.

Page Larry, Ngram viewer – Google Books (GB): https://books.google.com/ngrams/.

NOTES

1. Also referred to as *proverb genesis* or *proverbial birth* (Villers [2022: 1]).

2. Their processing requires the activation of both brain hemispheres (Honeck [1997], cited in Villers [2020]).

3. It is the year when Robert H. Goddard, the father of modern rocketry, designed and tested the first successful liquid-fuelled rocket. https://www.grc.nasa.gov/www/k-12/TRC/Rockets/history_of_rockets.html 04/09/2023.

4. https://dictionary.cambridge.org/dictionary/english/it-s-not-rocket-science ?q =not+rocket+science 03/09/2023.

5. https://www.oxfordlearnersdictionaries.com/definition/english/rocket-science#rocketscience_idmg_1 03/09/2023.

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9. Due to its more concrete nature, the *coinage* phase is often seen as the official birth of a PU (Villers [2016: 373]).

10. The frequency curves on Google Books N-gram Viewer displayed an upward trend up until 2019. Google Trends shows a sharp rise between July 22nd, when the movie premiered, and July 23rd (https://trends.google.com/trends/explore?geo=RS&q=i%20am%20become%20death&hl=en-US 06/09/2023).

11. https://www.phrases.org.uk/meanings/its-not-rocket-science.html#google_vignette 04/09/2023.

12. Relatively the same trend is observed in COCA. The frequency was at its highest during the period 2010−2014, after which it dropped during the period 2015−2019 (see Table 2).

ABSTRACTS

The present study relies on the five-stage model of *phraseme genesis* (Villers [2018; 2022]) in its exploration of the birth and propagation of a phraseological unit (PU). The focus is limited to the category of idioms, which represent a subclass of PUs (Moon [1998]; Everaert *et al.* [1995: 4]; Mel'čuk [1995: 168]). The choice of the idiom *it's not rocket science* was motivated by earlier research on phraseme genesis (Villers [2016; 2022]) which suggests that phases such as birth and propagation are easier to study in newer phrasemes, and rocket science, or the science of designing spacecraft, is of a more recent date. The study combines the corpus-based and memetic approach, and it has a twofold aim. The first objective is to ascertain the birth of the idiom, which is done by contrasting the data provided by COCA and Google Books N-gram Viewer. The second objective is to determine its main media of propagation. This is explored with the help of COCA which provides the information on the distribution of the idiom across different genres. In order to uncover the reasons behind the successful genesis of the idiom, we also check the features (i.e. *propagation boosters*) such as *distinctiveness*, *novelty*, *veracity*, *utility*, *ornatus*, and *publicity*. The results highlight the limitations of online corpora such as COCA and Google Books when it comes to the origin and propagating agents of new phrasemes given that there were no matching records for the earliest use of the idiom that is readily accessible on the Internet (that is, the year 1985). Rather, the corpora suggest that the idiom gained currency in 1987, and was first used in a magazine. Based on the observed data, the successful propagation of the idiom is largely due to its intrinsic qualities (*distinctiveness*, *ornatus*, *veracity*, and *utility*), the features that focus on the host's point of view (*novelty* and *expressivity*), as well as its reliance on various propagation agents (*the web*, *TV*, *movies*, *blog*). The paper ends with the schematic representation of the phraseme genesis for the idiom under consideration. The study also shows that the model of *phrase genesis* can be used with equal ease to study these phases in idioms, but that the trace of the origin of a phraseme should be done by consulting more than one source.

Cette étude s'appuie sur le modèle en cinq étapes de phraséogenèse (Villers [2018 ; 2022]) et explore donc la naissance et la propagation d'une unité phraséologique (UP). Elle se cantonne à la catégorie des idiomes ou « expressions idiomatiques », qui représentent une sous-classe d'UP (Moon [1998] ; Everaert *et al.* [1995 : 4] ; Mel'čuk [1995 : 168]). Le choix de l'idiome *It's not rocket science* a été motivé par des articles sur la genèse des phrasèmes (Villers [2016 ; 2022]), qui suggèrent qu'il est plus facile d'étudier la naissance et la propagation des phrasèmes récents. Le jeune âge de l'UP en question s'explique par le caractère récent de la fuséologie, ou science de la conception de fusées. L'étude combine la linguistique de corpus et l'approche mémétique et possède un double objectif. Le premier est de confirmer la naissance de l'idiome, ce qui est réalisé en comparant les données fournies par le corpus COCA et le N-gram Viewer de Google Books. Le second objectif est d'identifier ses principaux modes de propagation. Cet objectif est également complété avec l'aide de COCA, qui fournit des informations sur la fréquence de l'expression idiomatique dans différents types d'écrits. Afin de découvrir les raisons de la genèse réussie de l'idiome, nous étudions également les facteurs (ou accélérateurs de propagation) tels que le caractère distinctif, la nouveauté, la véracité, l'utilité, l'ornatus et la notoriété. Les résultats soulignent les limites des corpus en ligne tels que COCA et Google Books lorsqu'il s'agit de l'origine et des modes de propagation des nouveaux phrasèmes, étant donné qu'il n'y avait pas de trace écrite accessible pour la première occurrence listée en 1985. Les corpus suggèrent plutôt que l'expression s'est imposée en 1987 et qu'elle a été utilisée pour la première fois dans un

magazine. D'après les données observées, l'expression idiomatique a réussi à se propager grâce à ses qualités intrinsèques (*caractère distinctif, ornatus, véracité* et *utilité*), à des qualités perçues par les utilisateurs (*nouveauté* et *expressivité*), ainsi qu'à la diversité de ses modes de propagation (*Internet, la télévision, les films, les blogs*). L'article se conclut par le schéma de la genèse de l'idiome étudié. Il confirme que le modèle de phraséogenèse peut aisément être appliqué aux expressions idiomatiques, mais que la recherche de l'origine d'un phrasème doit se faire en consultant plus d'une source.

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Mots-clés: idiome, It's not rocket science, phraséogenèse, propagation des phrasèmes, accélérateur de propagation, mode de propagation, mémétique
Keywords: idiom, it's not rocket science, phraseme genesis, phraseme propagation, propagation boosters, media of propagation, memetics

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