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Review

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Elisa Mattiello, *Transitional morphology: Combining forms in modern English* (Studies in English Language). Cambridge: Cambridge University Press, 2023. Pp. v + 238. ISBN 9781009168281.

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Mattiello's 2023 volume is the first and, to date, the only monograph in the linguistic literature addressing the morphological category of combining forms (CFs) in English. Due to its fuzziness and heterogeneity, this category has been scantly treated in previous studies, where it has often been merged with other types of word-formation processes, thus giving rise to conceptual and terminological confusion. CFs occupy a borderline area between neighbouring categories, such as affixes, affixoids, abbreviations, blends and compounds, i.e. they have a hybrid nature. Mattiello, however, demonstrates that they also have specific properties that they do not share with other constituents, making them worthy of a distinct status.

In chapter 1, 'Introduction' (pp. 1–8), the author discusses some traditional definitions of CFs before providing her own: 'CFs are … initial or final bound morphemes which are either allomorphic variants of classical Latin or Greek words (e.g. *bio-*, *-logy*), or shortenings of (native or non-native) English words (e.g. *e-* from *electronic*, *econo-* from *economic/economy*), often with the intervention of a secretion process (e.g. *-(a)holic* 'person addicted to', *-gate* 'political scandal')' (pp. 2–3). She takes inspiration from and improves on Quirk *et al.* (1985: 1575), who defined them as 'combining-form compounds'. Mattiello clarifies that CFs are intermediate between compounding and derivation, thus lying at the boundaries of grammatical morphology. The label 'transitional morphology' that she proposes also improves on Dressler's notion of 'marginality' (2000: 1), which appeared to relegate certain word-formation processes to secondary, less important or even trivial phenomena.

Mattiello then presents the rationale behind the work, namely the elaboration of a theoretical model for English CFs that clearly distinguishes them from apparently similar categories, e.g. abbreviations and blends, which, however, belong to 'extra-grammatical morphology' (Mattiello 2013), and from derived and compound forms that are instead part of prototypical 'morphological grammar' (Dressler 2000: 1). The organization of the work and the contents of each chapter are illustrated and, finally, the target readership of the volume is discussed. The latter includes not only expert morphologists, but also other scholars, such as lexicologists and lexicographers, learners of English as well as researchers in different fields.

Chapter 2, 'Background of combining forms' (pp. 9–65), reviews the literature on CFs and related phenomena while, at the same time, discussing crucial issues concerning the bipartition between extra-grammatical and grammatical morphology as well as the further division of the latter into prototypical/central and non-prototypical/transitional. It then exemplifies and operationalizes the notion of transitional morphology with reference primarily to English, but also to other languages, in particular Italian, the author's mother tongue. While providing a working model for the categorization of CFs, this chapter also addresses the concepts of morphological productivity, abbreviation versus secretion, analogy and schema, reanalysis and semantic weight.

The literature review covers the period from the end of the 1960s to the present day and brilliantly summarizes in fifteen pages the most relevant works on CFs and CF combinations. The aim is to demonstrate that previous studies do not provide sufficiently fine-grained descriptions of CFs and that they even create confusion between CFs and adjacent forms: certain works, for instance, only discuss one type of CFs, e.g. neoclassical formations (*astro-logy*, *geo-graphic*; *geno-cide*, *laryng-itis*), or they do not distinguish between initial CFs (e.g. *astro-*, *electro-*) and final CFs (*-phile*, *-phobe*); others simply treat CFs are affixes or affixoids; in other cases, CFs are viewed as subsuming what are in fact different phenomena, such as abbreviations, blends and compounds. Therefore, Mattiello's important contribution in this chapter on the state of the art in this area of morphological research consists, above all, of an unambiguous identification of the overlaps and contrasts between close categories.

The theoretical model Mattiello adopts builds on Dressler *et al.*'s (1987) and Dressler's (2000) framework of natural morphology, which distinguishes between prototypical, marginal and extra-grammatical morphology. Such a framework, however, does not explicitly address CFs that straddle the borderline between these subcomponents of morphology. Therefore, with her investigation of transitional forms, Mattiello adds the missing piece to the puzzle. In other theoretical approaches, phenomena displaying divergent tendencies have sometimes been considered as belonging to 'extravagant morphology', as in the case of English *-ish* in creative and ad hoc derivatives (e.g. *forever-ish*, *James Dean-ish*, *out-of-the-way-ish*), but now also as a free lexical item. Mattiello observes that the concept of extravagance is best applied to the description of variation and change from a diachronic perspective, while transitional morphology also encompasses synchronic phenomena that stray over various linguistic levels (e.g. morphology, syntax, lexical-semantics and pragmatics) or the internal boundaries of morphology. She characterizes transitional morphology by drawing upon the notions of (1) dynamism and directionality, (2) boundaries, (3) prototypicality versus non-protypicality and (4) graduality versus dualism/superposition.

Dynamism concerns the diachronic evolution of language, as in the case of the fusion of originally distinct words (e.g. Latin *facili mente*) which over time have given rise to a single lexical item as a result of a grammaticalization process, whereby a free unit (Lat. *mente* = 'mind') becomes a suffix. This is an example of a transition from the level of syntax to morphology, involving a shift towards decreased autonomy of a lexeme, but

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the opposite directionality of change may also be observed, for instance when a bound morpheme shifts towards increased independence.

These processes involve overriding the boundaries either between or within language levels. Transitional phenomena also need to be examined with respect to the notion of non-prototypicality, in that they deviate to a greater or lesser extent from a certain expected behaviour. Even within the category of CFs, more natural trends can be observed, e.g. their tendency to appear either at the beginning or the end of a word versus their occurrence in both positions (*phil-/-phile*), which is a less prototypical scenario.

Lastly, instances of transitional morphology can be examined along a cline of interrelated phenomena or in terms of dualism/superposition. The appearance of a word part in a blend in many other blend splinters, an in the case of English *-(t)arian*, is an example of how a phenomenon may increase in frequency along a gradual continuum. By contrast, other morphological processes, such as the formation of *-er* synthetic compounds, can be explained by assuming a relation of dualism/superposition between categories; in other words, synthetic compounds are derived from both phrases and compounds.

Chapter 2 continues with an in-depth illustration of transitional phenomena between compounding and derivation (crossings from compounds to affixes, crossings from affixes to words, synthetic compounds, unique morphs, neoclassical compounds and splinters) and then focuses on the peculiarities of CFs. CFs vis-à-vis affixes and affixoids are first examined by considering a series of criteria involving boundedness, position, combinability, presence of linking elements, presence or lack of stress, lexical density, degree of non-independence and level of abstraction. Similarly to affixes, CFs are bound elements without an autonomous status (i.e. they cannot stand alone) that may appear at the beginning or end of a word, e.g. *bio-* in *biodata* and *-aholic* in *newsaholic*. Unlike affixes, however, CFs can combine with bound and free morphs as well as with one another to form neoclassical (e.g. *morph-o-logy*), abbreviated (e.g. *e-zine*) or secreted (e.g. *cyber-gate*) combinations. Another difference between affixes and CFs is that the former are usually unstressed, while the latter can be both stressed and unstressed. In addition, CFs tend to have a higher lexical density and a richer semantic profile, with affixes only providing information about space, direction, time and agent. For instance, the initial CF *neuro-* is semantically broader in scope than the prefix *re-*, which has only the meaning of 'again'. As for affixoids, they may have autonomous word status (e.g. *-man* in *postman* or *worthy* in *praiseworthy*), whereas CFs do not, but they express more abstract meanings; for instance, *-(t)arian* indicates 'someone with a diet restriction', as in *fruitarian*, *nutarian* and *pescetarian*.

CFs are then examined in comparison to compounds, with which they also have something in common: they may have left or right stress, they do not allow internal modifications (e.g. **black wooden board*, but also **spend-money-aholic*), they may have linking elements and they are regulated by analogy (Mattiello 2017). However, unlike compounds that result from the combination of two or more bases, CFs consist of bound morphemes attached to words, word parts or other bound morphs, which

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cannot vary their position (**logy-bio* vs *fast food/food chain*); and CFs only admit solid or hyphenated spelling (e.g. *astrology*, *e-reader*), while compounds may also appear spaced (*daisywheel*, *daisy-wheel* or *daisy wheel*).

In the final part of chapter 2, all the properties of CFs, affixes, affixoids and compounds are summarized in a useful table and by means of a figure that clearly shows the in-between nature of CFs. The transitional character of these formations thus becomes very evident. Lastly, the subtypes of CFs (neoclassical, abbreviated and secreted) are addressed in preparation for their more detailed analysis in three successive chapters, i.e. chapters 4, 5 and 6.

Chapter 3 is devoted to the illustration of the 'Dataset and methodology' (pp. 66–78). Although Mattiello uses the *Oxford English Dictionary* (*OED*) online as the primary source for her data, she also examines the occurrence of novel CFs in two corpora of the English language – the *Corpus of Contemporary American English* (COCA) and the *Corpus of News on the Web* (NOW) – in order to make estimates about their productivity, and then compares the most frequent CF combinations retrieved with the results obtained from the *Google Books Corpus* (GBC) as well. Therefore, after her solid theoretical account of CFs in chapter 2, which she situates within the broad field of transitional morphology studies, Mattiello carefully investigates these word combinations in their actual contexts of use, thus managing to provide an accurate and realistic picture of their behaviour in natural language.

The *OED* search returned 2,280 entries of CFs, the highest number of which is recorded in the nineteenth century (with a total of 1,047 occurrences), a period that abounds in neoclassical items as a consequence of the spread of scientific knowledge in different fields, such as anatomy, medicine or chemistry. For the study of productivity, Mattiello restricts the analysis of corpus data to the 1990–2020 period, a sufficiently long timespan to observe the recent growth of English vocabulary. While chapter 2 has a theoretical orientation and examines CFs from a qualitative perspective, chapter 3 and the successive chapters add a strong quantitative component to the analysis.

After explaining the practical approach followed for data selection and analysis in chapter 3, the focus of chapter 4 is specifically on 'Neoclassical combining forms' (pp. 79–105), which appear prevalently in specialized discourse as a result of the influence of Latin and Greek on domain-specific English vocabulary. Starting from the occurrences in the *OED* between 1950 and 2000, a quantitative analysis for each CF is conducted on the basis of three parameters, namely the number of types, the number of tokens and the number of nonce words (hapax legomena). In addition, diachronic variation in terms of frequency is examined with reference to the most common CF combinations appearing in the GBC in a seven-decade period (1950–2019).

The various subsections of chapter 4 list an impressive number of both initial and final CFs retrieved from COCA and NOW in descending order of frequency and productivity (raw and normalized frequencies are provided in brackets after each lexical item). The initial CFs (ICFs) examined are *exa-*, *ichno-*, *lexico-*, *nano-*, *peta-*, *polydeoxy-*, *polyribo-*, *seco-*, *synapto-*, *tera-*, *un-*, *yocto-/yotta-* and *zepto-/zetta-*, while the final CFs (FCFs) are many fewer and only include *-mer*, *-ogen*, *-penia* and *-valent*. The

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results are conveniently summarized in table 4.1, which is followed by three figures showing the type frequency, type/token ratio and hapax legomena/token ratio of all the neoclassical CFs examined in the two corpora. *Nano-* appears as the most frequent and productive ICF, followed by the FCFs *-ogen* and *-valent*, and the ICF *tera-*.

The diachronic study of the neoclassical CFs examined generally confirms that CFs are well attested in the last half of the twentieth century until the present day, with fluctuations that show an initial substantial increase for some ICFs (i.e. *exa-*, *ichno-*, *nano-*, *peta-*, *seco-*, *synapto-*, *tera-*, *un-*, *yotta-*, *zetta-*) followed by their stabilization; as for the ICF *lexico-* and for most FCFs, instead, there is a steadier trend with limited fluctuations; lastly, an initial high frequency/increase followed by a drastic decrease in recent times has been observed for other CFs, as in the case of *polydeoxy-*, *polyribo-* and *-ogen*.

Chapter 5 and chapter 6 are similarly structured and focus, respectively, on 'Abbreviated combining forms' (pp. 106–45) and 'Secreted combining forms' (pp. 146–86). The results have been obtained with the implementation of the same methodology used for the analysis of neoclassical CFs. The abbreviated CFs examined (i.e. ICFs *-atto*, *-Brit*, *cyber-*, *digi-*, *dino-*, *e-*, *econo-*, *femto-*, *lamino-*, *Luso-*, *nega-*, *petro-*, *porta-*, *syn-* and FCFs *-bot*, *-jack*, *-lect*, *-olol*, *-onium*, *-tainment*, *-ylidene*) show that they retain the semantic content of their source lexemes and that they appear both in colloquial contexts and specialized environments (e.g. IT and physics). The most profitably abbreviated CFs appear in the technological domain, with *cyber-* and *e-* having the highest frequencies and productivity, followed by *dino-* and *-tainment*.

In this relatively short review it is impossible to do justice to and report in a comprehensive way on all the trends and tendencies for each CF that Mattiello so accurately and precisely identifies and discusses. It can generally be said that abbreviated CFs show a high productivity from the perspective of lexicalization and that, unlike neoclassical CFs, their use has increased in the last decades, giving rise to novel formations in different areas of the English vocabulary, both formal and informal.

In chapter 6 Mattiello completes her investigation of CFs with reference to secreted forms that, unlike the other two types of CFs examined, present more specific semantic nuances if compared to their source lexemes and which can be reinterpreted on the basis of an abstraction process. They result from an initial blending process after which one of the splinters began to be reused for other coinages and then reinterpreted, partly departing from the meaning of the source word. The secreted CFs under scrutiny here are from the 1950–2000 period and again consist of both ICFs and FCFs: ICFs: *agit-*, *alterna-*, *Brit-*, *digi-*, *Franken-*, *hover-*, *m-*, *maxi-*, *midi-*, *must-*, *petro-*, *robo-*; FCFs: *-adelic*, *-ati/-erati*, *-babble*, *-bot*, *-gate*, *-gram*, *-(i)stan*, *-nap*, *-nomics*, *-orama*, *-rific*, *-think*, *-verse*, *-zilla*.

Despite the idiosyncratic behaviour of each CF, Mattiello concludes that the profitability of secreted CFs, which represent a relatively recent phenomenon, is generally less remarkable than that of abbreviated forms. They are principally relevant to the twenty-first century (e.g. *Twitterific*, *Potterverse*, *momzilla*), but they are increasingly contributing to the expansion of the English vocabulary.

In chapter 7, 'Splinters or combining forms "in the making"' (pp. 187–203), Mattiello concludes her thorough and rigorous analysis by considering those formations that are on

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the way to becoming proper CFs and which are, again, differently treated in the literature and in the *OED*. Differently from CFs, splinters are word parts that have not attained a productive status yet, i.e. they do not appear recurrently in novel words. By contrast, CFs are created analogically after the same morphological pattern. For example, *fruitarian*, *nutarian* and *breatharian* have emerged via a paradigmatic substitution of the base *veg-* in the word *vegetarian*, which was taken as a model for the creation of other words based on the same schema.

Due to their even more transitional character, if compared to CFs, splinters are variously labelled and the *OED* associates them with different word-formation processes (compounding, derivation, clipping, blending and analogy). None of the splinters analysed in chapter 7, i.e. *adver-*, *docu-*, *fem-*, *net-*, *vege-*, *-cation*, *-ercise*, *-flation*, *-kini*, *-lish*, *-(t)arian*, *-umentary* and *-zine*, appear as separate entries in the *OED*. Interestingly, Mattiello observes the presence of some new *-(t)arian* words, e.g. *pasta-tarian*, *pizzatarian*, *chickenatarian* and *happytarian* that do not result from a blending process and are not modelled on *vegetarian*. Therefore, they cannot be added to the *-(t)arian* series, with which they are semantically incompatible, because they have developed a more specific meaning. Among the splinters analysed, *docu-*, *-net*, *-umentary* and *-zine* appear as the most stable ones, even though they are not as frequent as established CFs in either COCA or NOW.

Chapter 8 presents the 'Conclusions' (pp. 204–11) based on the results of the extensive research that the author has carried out: CFs represent an independent morphological category that was worth examining in detail due to the lack of previous comprehensive accounts explaining their origin, formation and productivity for the coinage of new words. Not only has Mattiello situated her analysis within the broader field of morphology, clarifying and helping the reader to understand the often blurred boundaries between neighbouring categories, but she has also conducted a systematic investigation, both qualitative and quantitative, of the three subtypes of combining forms, namely neoclassical, abbreviated and secreted CFs, and of splinters that she views as 'CFs at their birth' (p. 205). Although CFs have some of the features of affixes and compounds, their peculiarity lies in the fact that they can combine not just with bound and free morphs, but also with one another.

Mattiello's volume undoubtedly represents an invaluable resource for all those linguists and morphologists interested in how the lexicon of English evolves and expands, but it is a must-read for lexicographers who are ultimately responsible for updating dictionaries with new words and meanings.

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