A Spatial Morphology of the English Verb Structure of Simple Sentences Aids Appropriate Cognitive Structures Develop and Offers EFL/ESL Potential as a Mobile App

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Abstract. For ubiquitous learning, appropriate learning objects need to be accessible at the right time and place. EFL/ESL learners face confusion in their use of appropriate English verb tenses and forms. The best place to locate such learning objects is in the learner's awareness, so that they may creatively imagine the necessary schema, navigate through it, and locate the correct formal expression of what they intend. I advance a spatial morphology of the English verb forms and tenses applied to generate simple sentences. This is designed to enable appropriate cognitive structures to form and stabilize in the language learner's mind while allowing ready on-screen implementation as an interactive mobile application for smartphones and tablets, head up displays, and online grammatical resources such as webpages. The primary intended realization is thus as an *aide-mémoire* in the learner's mind, and as an App for the iPad.

Keywords: EFL/ESL, English verb structure, simple sentences, mobile app, learning objects, spatial morphology, cognitive structure, iPad, iOS, CALL.

1 Introduction

As Fiaidhi observes [1], in the rush towards ubiquitous learning, appropriate learning objects need to be made accessible to learners at the right time and in the right place. EFL/ESL students understandably face confusion in their recall, choice and use of English verb tenses and forms that are deemed appropriate to an intended context. Of course, the best place to locate such learning objects is, through assimilation, in the learner's own awareness, so that they can creatively imagine the necessary schema, navigate through it, and locate the correct formal expression of what is intended. Providing an adequate spatial morphology of these tenses and forms offers the potential of more effective learning through cognitive schema and interactive apps.

In this paper, I advance a spatial morphology of the English verb forms and tenses applied to generate simple sentences, which is designed to enable appropriate cognitive structures to be formed and stabilized in the language learner's mind. The visual spatial structure is designed to allow ready implementation in interactive digital resources (in mainly landscape mode), for use in software driving on-screen displays.

These include mobile apps for devices such as smart phones (which students are likely to have with them), and more particularly in tablets such as the iPad (which will increasingly be used by students); head up displays (e.g. by computer gamers, Sloodle users, pilots, vehicular drivers etc.); and for electronic dictionaries and online resources such as online dictionaries and other grammatical resource webpages. The primary intended realization of this is two-fold: firstly as an *aide-mémoire* in the learner's mind; and secondly as an App for the iPad. I envisage that having students use the App would significantly assist their learning of correct cognitive structures.

2 Structure and Use of the English Verb App

2.1 The Spatial Morphology of the English Verb App

The spatial morphology (used not in a linguistic sense, but in the traditional sense of formal organization) draws its inspiration from certain configurations common in Sacred Geometry, Art and Architecture that have traditionally served to enable ready learning and contemplation of highly complex cosmologies and the realities that they are deemed to mediate. The primary geometrical form is of the aedicule, represented as a flat vertical rectangular surface in the normal field of vision, rather than as a horizontal plan. At the center is situated the Infinitive form of the verb, the basic and most essential form that the verb takes. The surface is developed as a four-fold inner zone, which for a given verb displays its four aspects, sentences that accord with those aspects, their construction, and use. A peripheral border displays other grammatical categories. For the Finite verbs and forms, the bottom left inner quadrant is the starting point for the four fundamental grammatical Aspects, and represents the Simple verb. Extending the Simple form to the right gives the Progressive/Continuous form of the verb at bottom right; while (as it where an octave of) the Simple, directly above, gives the Perfect form at top left. Finally, extending that Perfect form to the right, while simultaneously providing (a hovering octave of) the Progressive directly above, gives the Perfect Progressive/Continuous at top right.

The border around the four edges accommodates the other major grammatical categories, and comprises interactive buttons, tabs, and where needed drop-down menus. The important TENSE-ASPECT-MODE dimensions are thus provided vertically, as in Fig. 1. The base form of the verb (the bare Infinitive) is entered or selected from a drop-down menu from the right-hand major top field. Side options of the top and bottom borders provide for grammatical categories of QUALITY (i.e. Finiteness), NUMBER, VOICE and POLARITY. The top right Number field works in conjunction with the PERSON and GENDER categories that are provided in the right side border. MODE, in the bottom border, is differentiated into major fields of MOOD and MODALITY. Contextual fields further expand these options in the left side border. For the purposes of this paper, verbs are presumed to be either Intransitive or Optionally Transitive, and sentence objects are not required nor displayed. (The left border could instead display TRANSITIVITY fields accommodating Obligatory/Optional Transitive/Intransitive, and interact with verb PROCESS Dynamic/Stative, and verb VALENCY 1/2/3 could be included; see [2]).

2.2 Use of the English Verb App

The ESL/EFL learner firstly enters a base verb (the bare Infinitive form of the verb) at the top right, either by selecting from a drop-down menu, or by typing (with intelligent word recognition and completion); this could display in the center as in Fig. 2B. Default settings for the grammatical categories would accord with the most common states for English of the target learner level, but could be reset in a Settings menu, which also accommodates choice of UK, US or other dialect. The user then selects options from the border fields in accord with the desired use. The minor side fields on the top and bottom borders represent binary choices, and are exclusive "or" choices except for NUMBER, which can be deselected, have either option selected, or both. The top border QUALITY (Finiteness) provides exclusive choice of Finite or Non-finite Verb form; at bottom, VOICE allows for exclusive Active or Passive choice, while POLARITY allows for exclusive Affirmative or Negative choice.

Major top, bottom and right border fields allow for more than two options. TENSE is contextual, and when Finite Quality is selected, provides for an exclusive Past, Present or Future choice, provided the MODALITY choice is non-modal. When the QUALITY is Non-finite, the options will depend upon other settings e.g. whether the VOICE is Active or Passive. Along the bottom border, MOOD at left provides for exclusive Declarative (Indicative) "declare", Interrogative "question", Imperative "direct" or Subjunctive "subjunct" choices. The contextual menu along the left side border may be activated by these choices, e.g. when the Interrogative Question is selected, the left border could show Wh- question words who/what/where etc. as prompts and/or could toggle with Polar question words such as do/did/is/are/will etc. The bottom border at right provides for the exclusive selection of MODALITY: Non-modal, Modal, Semi-modal, or Other modal. When Modal is selected, the contextual menu of the left side border displays the Modals: may/might/can/could etc.

The right side border differs in that the choices need not be exclusive but as for NUMBER may be (partially or totally) inclusive and are intended to function in conjunction with the Number selection (at right of the top border). So PERSON can be selected as none, any, some or all of First/Second/Third; while GENDER can be selected as none, any, some or all of Male/Female/Neutral - in English it is only relevant if Third Person Singular has been selected. These provisions of exclusivity allows the display of just one PERSON, or of a limited, or of a full conjugation.

The App then displays in the inner quadrant the four Aspects of the specific verb base and chosen grammatical categories, showing the four simple sentences, sentence constructions, tenses, and typical uses (from Swan [3]). The same Verb form thus assumes the same relative position in each inner rectangle, so that for any given TENSE, the relation between Simple, Continuous, Perfect, and Perfect Continuous aspects is readily apprehended. Ideally, the learner internalizes the language structure.

2.3 Using Finger Gestures in the English Verb App

When the FINITE quality is chosen, single tapping any one ASPECT (of an inner quadrant) zooms that quadrant to fill the entire inner space, and would allow more detailed information to be displayed. A full conjugation could be displayed, as in Fig.

2c. Single tapping a zoomed interior collapses it to return to the four-quadrant view. All finger gestures would be in accord with Apple's iOS Human Interface Guidelines.

Horizontally swiping the interior permits cycling through the TENSEs, so a right swipe regresses the Tense being displayed, while a left swipe advances the Tense e.g. from Past to Present, or Present to Future. The Settings could allow the horizontal swipe to also include the Infinitive, cycling through Past-Present-Future-Infinitive.

When just one NUMBER and PERSON has been selected, vertical swiping of the interior zone allows cycling through the six Number/Person combinations 1PS-2PS-3PS-1PP-1PP-3PP (First Person Singular - Second Person Singular - Third Person Singular - First Person Plural - Second Person Plural - Third Person Plural). Swiping the interior quadrants upwards will then advance the Number/Person displayed e.g. 2PS > 3PS; swiping it downwards will regress the display e.g. 2PP > 1PP.

3 Merits and Limitations of the English Verb App

This App encourages playful exploration of the effects of varying the values of different grammatical categories and thus allows a deepening appreciation of the structure of the English language, albeit at a relatively simple level.

Further, correspondences between verb forms for a particular tense can be comprehended in relation to the other tenses, for example in considering the relationships revealed by a horizontal left swipe sequence of Past Progressive below to Past Perfect Progressive above, Present Progressive below to Present Perfect Progressive above, and Future Progressive below to Future Perfect Progressive above. It is then apparent that the same Verb form assumes the same relative position in each configuration, so that for example the Perfect Past is in top left quadrant of the Past tense, the Perfect Present is in top left quadrant of the Present tense; and the Perfect Future is in top left quadrant of the Future tense. This structure should assist learning.

The limitations that are met are primarily those of the structural complexity of language in general and of the English language in particular (expert Grammarians are not infrequently at odds over issues of linguistic structure); and these must be set against the honest and understandable limitations of the second language learner. Thus a satisfactory compromise needs to be made between a simplicity that can be comprehended, and a complexity that does justice to the target language. To that end, the structural morphology presented does not address sentence objects (though these could be readily incorporated), and is restricted to simple sentences (it does not deal with compound and complex sentences). The treatments of passive and of non-finite forms have been greatly simplified; and imperative and subjunctive moods as well as semi-modal and other modalities, though provided for, have not been structured.

The App is designed to fit in broad agreement with the Apple iOS Human Interface Guidelines [4]: the display resolution accords with the 960x640 pxl iPhone screen, and fits comfortably on the 1024x768 pxl iPad screen. Border widths of 50 pxl at top/bottom and 48 pxl left/right mean both dimensions of the 864x540 pxl interior are rich in factors, which allows convenient subdivision into equal columns and rows ($864 = 2^5 3^3$, $540 = 2^2 3^3 5$), while minimum button sizes are adequate. (Color-coding of buttons and tabs is not shown in this black & white paper; images are much reduced).

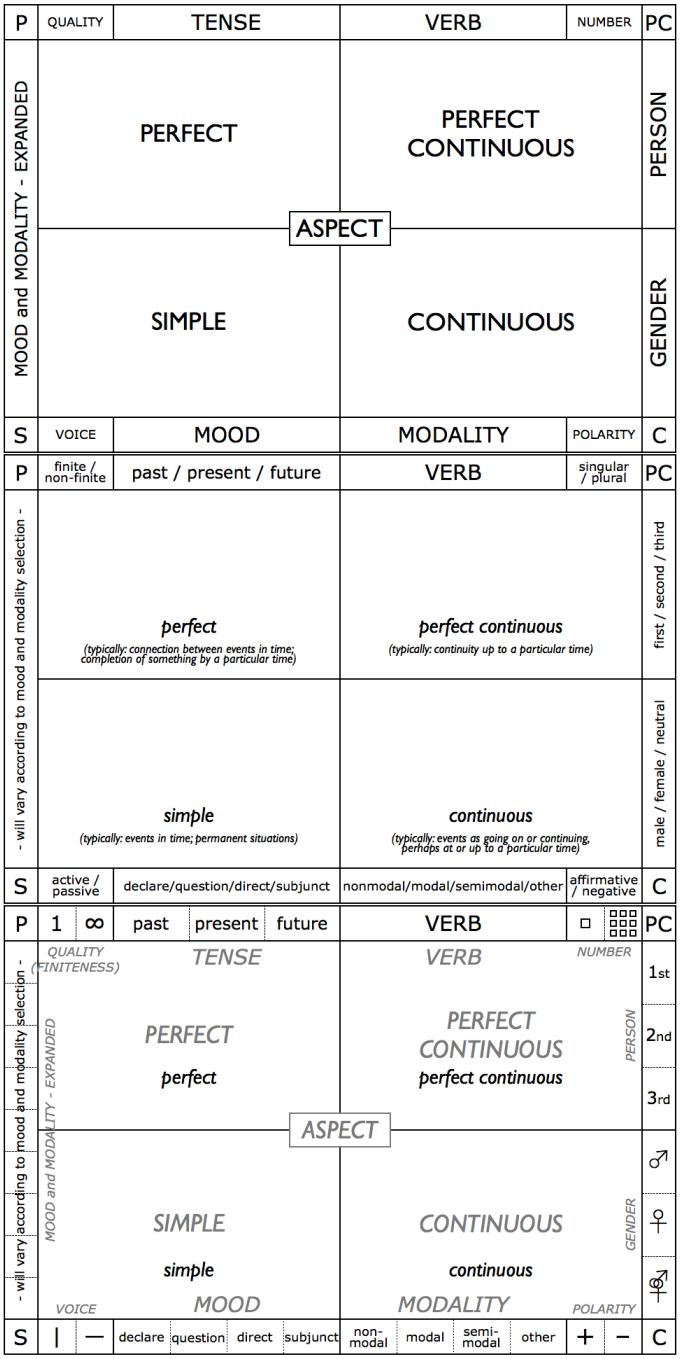

Fig. 1. The basic structure showing a. the main grammatical categories; b. differentiation of the main grammatical categories into options; and c. various options as actually presented (with categories appended in grey text).

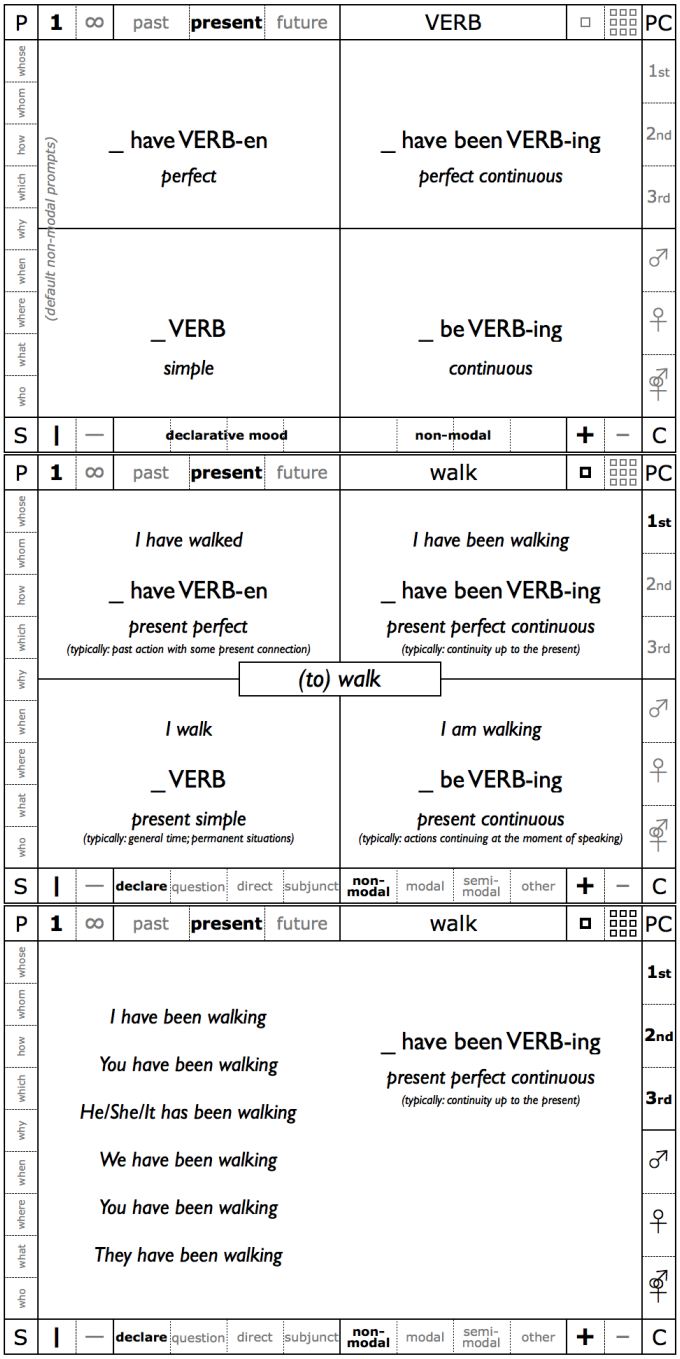

Fig. 2. Finite/Present/Active/Declarative/Non-modal/Affirmative showing: a. archetypal sentence construction; b. with Singular/First Person/ sentence construction (Infinitive at center could be tap-toggled on and off); c. full conjugation for all Numbers, Persons and Genders.

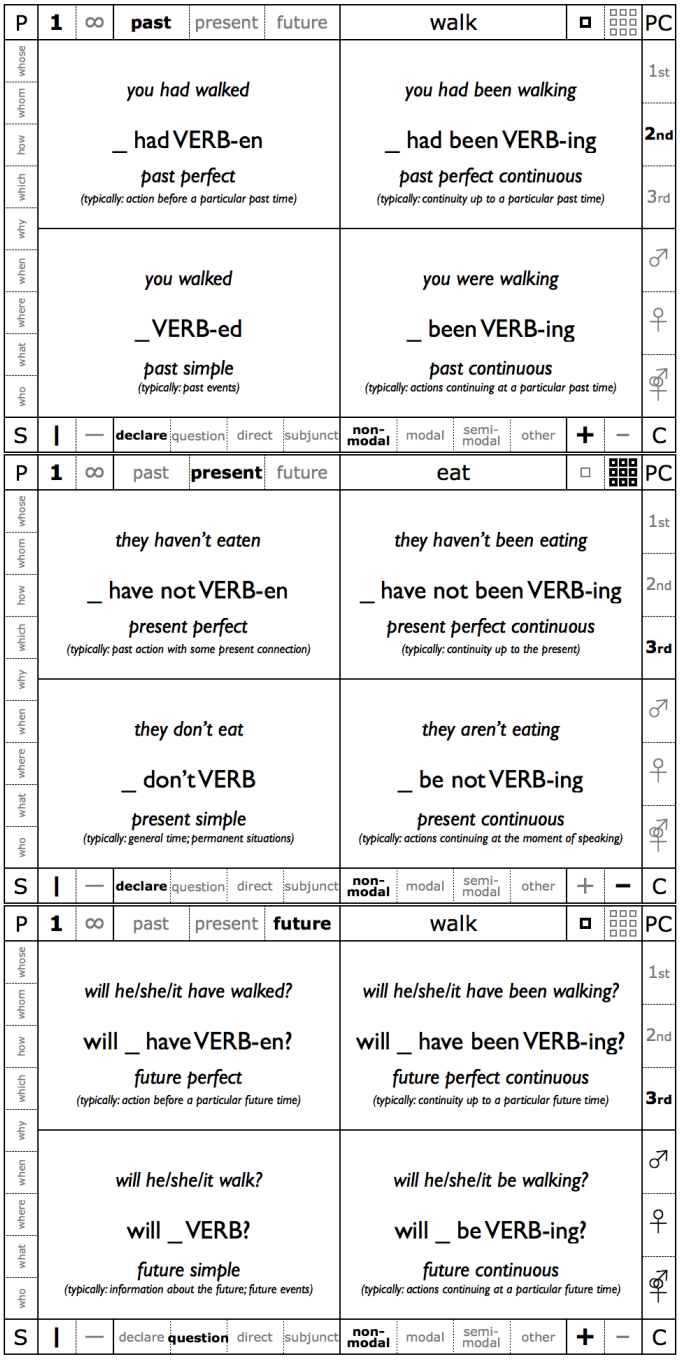

Fig. 3. a. Finite/Past/Singular/Second Person/Active/Declarative/Non-modal/Affirmative; b. Finite/Present/Plural/3P/Active/Declarative/Non-modal/Negative with different verb; and c. Finite/Future/Singular/3P/Active/Interrogative/Non-modal/Positive constructions.

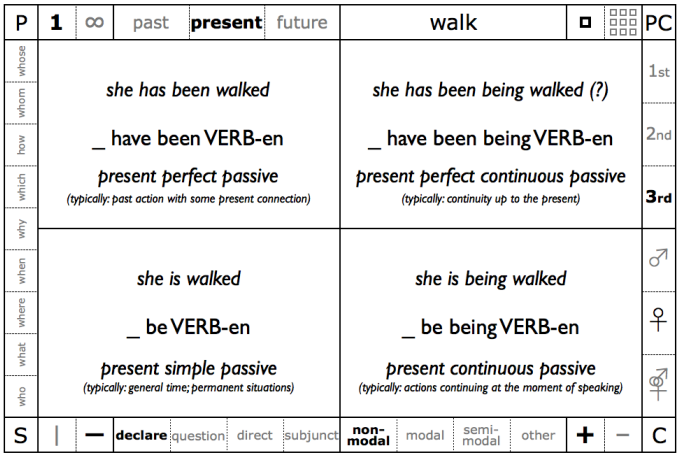

Fig. 4. Finite/Singular/3P/Passive/Declarative/Non-modal/Affirmative: Present/Female. (Bracketed terms help identify the appropriate tense).

4 Conclusion

As I elsewhere detail, it is now apparent that the ICT revolution is radically impacting pedagogy [5]. In language learning, this is now noticeable in the cognitive schema that might be effectively utilized in conjunction with language learning strategies that are more suited to the digital age. Fiaidhi rightly maintains that the pervasive impact of the Internet, mobile apps, smartphones and now tablets means that learning objects are required that satisfy demand for ubiquitous learning at the right time and in the right place. The ways in which language is conceived, imagined, learnt, and utilized are changing. Envisaging and developing spatial morphologies that aid learning - via a dialectic between the space of the imagination and the digital realm of mobile apps - will I trust contribute to that exciting educational and technological evolution.

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