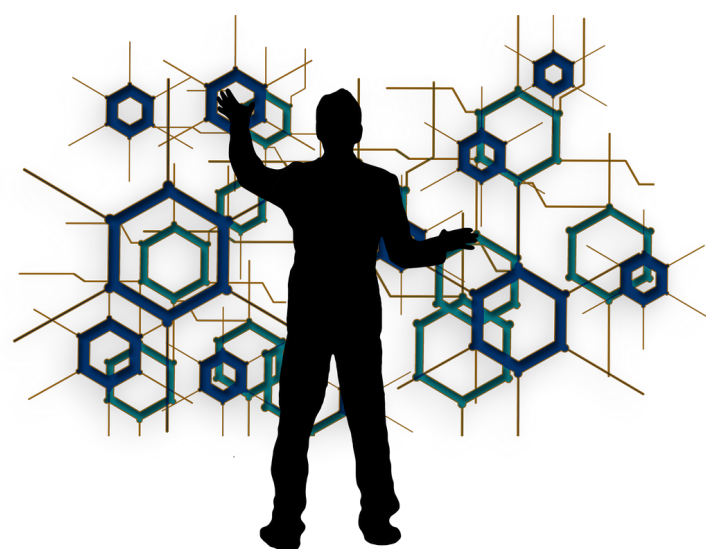# Teaching Grammar as a Complex Adaptive System

Our Definition of Grammar

"Grammar is every feature of a language that gives the different words and sentences their meaning, with the importance often being how words come together to give meaning and how individual words are impacted when they come together to give meaning. These are defined and developed by the people who actually use the language, through usage, and will be acquired naturally by native speakers allowing them to use the language."

Joel Pope and **Echo Yuan**

Complex Adaptive Systems

- This is a system which:
- Involves multiple different factors that interact.
- Is dynamic and changes over time.
- Is non-linear - it or it's state will sometimes change very quickly in a short space of time, due to an onsetting factor. On other occasions, it may change only very little over a long period of time.

- These features exist in numerous real-world systems. They seem very standard. Hence it is a common type of system. It exists in numerous areas, including nature, for example, the human brain, the immune system, the nervous system and ecosystems. Also social systems, for example, culture and education systems, and organisational systems, for example, the economy.

How the Grammar of Human Language Develops

- Language develops out of the need for social interaction, often for collaboration and support.
- Different factors affect the development of the grammar.
 (1) The natural tendency of the human brain to create order and structure, and to pattern recognize. The needs of efficient production and efficient comprehension, results in recurring rules for how words are put together developing.
(2)   Balances between needs of speakers who desire as little work as possible, and shorter utterances, and listeners, who require clarity.

- Cultural and geographic borders result in different languages. However the same type of human cognitive thinking result in many similarities between the grammars the use of "go" or "come" to create a near future being one.
- Grammar that develops in a language won't be completely random. Nevertheless, it won't be static. It will be a complex adaptive system.

A Language as a Complex Adaptive System

- Each individual has their own grammar. This is because no two individuals have exactly the same experiences with words or sentence structures.
- There is also however, a communal grammar, based on the individual grammars of all users. Because everyone is different, there will be no individual who actually represents this. Users can influence this to change however.
- Whenever interactions occur, the grammars of the individuals involved can change as they will now have new associations with the words and sentences used. There is also the possibility for the communal grammar to change. This can be the case for interactions even between only a small number of individuals, for example when a new internet slang phrase takes off.
- Indeed changes will generally occur bottom-up, starting from the level of a small number of individuals, and exponentiating.
- It is non-linear. Sometimes, large changes may occur in a short time, for example over times of fast developments of the internet, when internet language takes off. On other occasions, the change is much slower.

An Individual's Language as a Complex Adaptive System

- While the grammar of the language as a whole is a complex adaptive system, so to is an individual's grammar within their knowledge, understanding and use of the language.
- In your first, second and later languages, your own grammar will constantly adapt over time. This can be based on multiple factors. In some cases it may come from new input, for example new reading or television content. In these cases, it is language you are receiving that has an impact. However, your own language production and experimentation with language can also. Your grammar can also change as a result of new interactions and as you meet new people, and new societies or culture, the grammar of which, different to yours, may have an impact on your own. Multiple factors affect your language and it is dynamic.
- It is very much non-linear. Sometimes and individuals language may change much in a short period of time. Sometimes it may only change a little. For example, in the early stages of learning a language, on one day, you may learn ten new words, the next day, only one.

Using this as an Approach to Teaching

- Support student's language and grammar to develop within this complex adaptive system.
- Expose them to lots of personalized material so that they can explore the language naturally. If they have an interest in science, allow them opportunities to explore science content in the new language. This will allow them to work with language in the way they would do so in their first language.
- Provide opportunities for project based learning and task based learning within the language, as well as problem solving and communication activities. This will allow students to practice necessary and meaningful communication in the language. It will allow for natural experimentation with the grammar. This can also mean the language within the class as a whole can develop as a complex adaptive system.
- Allow students to experience the same language but in new contexts, for example, first a reading, then a video.
- Support students to build their ability to adapt language to different situations. One example is to complete the same speaking task but working with different partners and with different time constraints for example.
- As a teacher, focus on making the above happen.
- Correct and focus on accuracy and drilling only purposefully.

References

Beckner, C., Blythe, R., Bybee, J., Christiansen, M. H., Croft, W., Ellis, N. C., Holland, J., Ke, J., Larsen-Freeman, D., & Schoenemann, T. (2009). Language is a complex adaptive system: Position paper. The Five Graces Group.

Teaching English with Oxford. (2016, May 10). Complex, not complicated: Diane Larsen-Freeman on complexity theory in applied linguistics (Part 3) [Video]. YouTube. The TEFLology Podcast. (2019, August 21). TEFL Interviews 56: Diane Larsen-Freeman on complexity [Video]. YouTube. https://www.youtube.com/watch?v=AjhA3EoG2fQ

The TEFLology Podcast. (2019, August 21). TEFL Interviews 56: Diane Larsen-Freeman on complexity [Video]. YouTube. https://www.youtube.com/watch?v=AjhA3EoG2fQ