



CONSERVATION LAW IN RELATIVE CLAUSES

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Abstract:

The purpose of this present paper is to present a cognitive framework, coined as “Conservation Law,” which may shed new light on insightful understanding of the structures of sentences involving relative pronouns. Given that there are roughly four types of relative pronouns; namely, general, compound, relative adverbial, and quasi-relative, a conservation law in both structures and semantics exists. We start by combining two simple sentences into a resulting sentence with relative pronouns, and, through careful observation and calculation, we found the equivalence in word counts between original and resulting sentences. The conservation law mainly refers to the structure equivalence on either words or meanings among these four types of relative pronouns, or relative clauses. With the help of conservation law, the understanding of relative clauses can be much easier, because they are, among others, the most difficult and complex structures in English syntax, especially for EFL learners. Hopefully, this cognitive framework may be of great contribution to EFL English instruction.

Keywords: relative clauses, relative pronouns, conservation law, antecedent

1. Introduction

When it comes to adjective clause, most EFL teachers as well as students will experience frustration, if not despair, as it is inherently complex (Gass & Selinker, 2001). As the term implies, relative (adjective) clause (RC) is a clause that serves as an adjective to modify its antecedent (a noun). It involves at least two interactive components or variables: antecedent, and cases of pronouns. Mathematically, it can be expressed as RP (relative pronoun) = f (antecedent X cases). Note that the symbol “X” denotes interaction, which means the variables “antecedent” and “cases” should be considered

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simultaneously and contingently (that is, they are interactive), as different antecedents may determine the unique appropriate corresponding relative pronoun, whose different cases are also determined by the structures of a given sentence (Subject, Verb, Object, Complement) that follow. Apparently, there exists element interactivity in finding a proper RP. The high element interactivity in relative clauses naturally create intrinsic cognitive load (Sweller 1994; Sweller and Chandler 1994) for EFL learners and teachers. To cope with the intrinsic cognitive load, according to Sweller and Chandler, one must change the nature of what is learned or by the act of learning itself. To deal with the high element interactivity in RP, EFL teachers may adopt working examples where steps of finding appropriate relative pronouns are specified. The approach with worked examples, based on Cooper and Sweller (1987), may reduce extraneous cognitive load by reducing element interactivity. However, through such an approach, both EFL teachers and students will still have to face the inherent high element interactivity in RP. While there have been researchers working on the hypothesis explaining the complexity and difficulty involved in RP instruction (Keenan & Comrie's, 1977; Kuno, 1974; Hamilton, 1994; Sadighi, 1994; Safavi, 1994; Sheldon, 1974; Paris, 1976;), this paper suggests a conservation law to deal with the inherent high element interactivity of RP. The rationale behind the conservation law is that the high element interactivity of RP can be reduced by offering an underlying principle embedded in the interactivity between antecedent and case identification. And if the underlying principle has already been stored in learners' long term memory as a schemata, then instruction of RP can be greatly improved. Undoubtedly, conservation laws are common ideas in various fields of discipline, and have already become our schema in our long term memory store. Applying such a law can be an effective access to RP. Admitted that the overwhelming complexity of RP has caused frustration in most EFL learners, sentences with relative pronouns are so common in English literary works and so being able to understand them and write them correctly and meaningfully is essential for EFL learners.

In the following, I will specify the positions of RC, its origin or purpose of sentence combination, out of which the conservation law is derived, and the test of such a law via interpreting the four types of relative pronouns.

2. Positions of RC

Legitimately, RC as an adjective must be placed after the noun it modifies, which can be illustrated below:

N(RC) V N(RC)

Out of convenience, RC is placed behind both Ns above, but it can be placed behind any noun it seeks to modify. To be specific, RC can be expressed in its more intuitive form as Conjunction (Conj.) + (S) + V + (O/C) below:

N[Conj.+(S)+V+(O/C)~] V N[Conj.+(S)+V+(O/C)~]

The [Conj.] above is, what is called, relative pronouns (RP), and the Noun right before it is antecedent. Besides, also note that there are a total of three verbs in the above pattern where two RCs are involved. Practically, the above patterns (with only one of them being the main verb, while the others subordinate) are actually the combination of three basic sentences.

2. Sentence combination via RP

As man grows mature, his sentences uttered will involve more than two verbs, which is what we mean by sentence combination. See the examples below:

1. *"The student lives in the house."*
2. *"The student studies computer science."*

Directly combine these two sentences, and we have:

→ *"The student lives in the house + the student studies computer science."*

Seemingly the sentence above is wrong for two illegitimacies: two verbs (lives, and studies) coexist (comma splice), and two identical nouns (the student, the student) redundancy. RP is thus used to correct the two above mistakes at the same time.

Practical steps can be:

Step 1: Replace the latter Noun with proper pronoun (Here 'he,' the tentative option).

Originally,

→ *"The student lives in the house + (the student he) studies computer science."*

Step 2: Use a conjunction (e.g. that) to solve the illegitimate coexisting verbs
Originally,

→ *"The student lives in the house + (that) the student studies computer science."*

Step 3: Make the conjunction (that) and the pronoun (he) into one, thus:

→ *"The student lives in the house + (the student he that) studies computer science."*

Step 4: Place the RC right after the noun (student as an antecedent), thus:

→ *"The student [(that) studies computer science] lives in the house."*

Note that the resulting sentence with RP has the same word count as the combination of original sentences 1 and 2, detailed below:

1. *"The student lives in the house."* (4 words, "the +N" as one count)
2. *"The student studies computer science."* (4 words, "the +N" as one count)

While the resulting sentence: (Still "the +N" below as one count)

→ *"The student [(that) lives in the house] studies computer science."* (8 words)

Obviously and interestingly, with RP, the original sentences and the resulting one can be equivalent in word count, from which a tentative conservation law is derived.

4. Conservation law in science and RC

In [physics](#), a conservation law indicates that a particular measurable property of an isolated [physical system](#) does not change as the system evolves with the passage of time (1). Generally, conservation laws include [conservation of energy](#), [conservation of linear momentum](#), [conservation of angular momentum](#), and [conservation of electric charge](#). Specifically, energy can neither be created nor destroyed; rather, it transforms from one form to another. For instance, [chemical energy](#) can be [converted](#) to [kinetic energy](#) in the explosion of a stick of [dynamite](#). A consequence of the [law](#) of conservation of energy is that a [perpetual motion machine of the first kind](#) cannot exist. That is to say, no system without an external energy supply can deliver an unlimited amount of energy to its surroundings. By analogy, EFL student writers cannot create a resulting sentence with RC more than the number of original simple sentence they have in mind. To help support the subtle relevance between conservation law in science and that in terms of 4 types of RC, we pick the first law of thermodynamics as an expedient reference. Such a law, for a closed thermodynamic system, may be stated as (2):

$$\delta Q = dU + \delta W, \text{ or equivalently, } dU = \delta W - \delta Q$$

Where,

δQ is the quantity of [energy](#) added to the system by a [heating](#) process;

δW is the quantity of energy lost by the system due to [work](#) done by the system on its surroundings; and

dU is the change in the [internal energy](#) of the system.

By analogy, we find the relevance in types of RP, thus,

Compound RP = Antecedent + General RP

Relative Adverbial = Preposition + General RP

Before above relevancy can be elaborated, the background knowledge with reference to the choice of RP based on antecedent and the variations of structures behind is of prime significance.

5. Interaction between Antecedent and case structures

Classification of Antecedent of RP and identification of its structures behind are two most important tasks in deciding the resulting RP. Conventionally, antecedent can be Person, Non-person, and both (person + non person), each of which determine the choice of corresponding RP. See the Table below:

Table 1: Varieties of antecedent and corresponding RP

Antecedent	RP
Person	Who-group
Non-person	Which-group
Person + Non-person	That-group
Empty (Person)	Whoever-group
Empty (Non-person)	Whichever -group
Non-person (space), 2 nd verb intransitive	where
Non-person (time), 2 nd verb intransitive	when
Non-person (cause), 2 nd verb intransitive	why
The same/such/as...+antecedent	as
More/~er +antecedent	than
Few/ no/ hardly.... +antecedent	but

As to the choice of proper case of RP, identifying the structures behind the RP in terms of subject, possessive, and object is the key cognitive activity. According to conservation law in word count and structures, subject case is used when it is missing behind the RP, possessive case when possessive pronoun is missing (based on the meanings of the word chunk), and object case when it is missing. See the table below:

Table 2: Missing structure and the case of RP

RP position []	Subject case	Possessive case	Object case
[] V + (O/C) (if subject is missing)	X		
[] N+V + (O/C) (if possessive is missing)		X	
[] N+V (if a preposition is missing)			X

From Table 2, each case assigned to the blank is to make up the absence of the structures (can be subject, possessive, or object) behind RP. This is a clear indication of the conservation law in RC. In the following, we will present the four types of RP, to further demonstrate the conservation law.

6. General RP

The general type of RP includes *who*, *whose*, *whom*, *which*, *of which*, *that*. Note that deciding their proper use involves classification of Antecedent of RP and identification of its structures behind. See Table 2 below:

Table 2: Varieties of General RP

Antecedent \ Case	Subject	Possessive	Object
Person	Who	Whose	Whom
Non-person	Which	Of which	Which
Person + non-person	That	X	That

Examples:

A: Person as antecedent:

- | | |
|--|-------------------|
| 3. "This is the man [who] can help you." | (Subject case) |
| 4. "This is the man [whose] father is a doctor." | (Possessive case) |
| 5. "This is the man [whom] Jane falls in love with." | (Object case) |

B: Non-person as antecedent:

- | | |
|--|-------------------|
| 6. "This is the house [which] belongs to John." | (Subject case) |
| 7. "This is the house [of which the roof] is red." | (Possessive case) |
| 8. "I visited the house [which] Jane bought." | (Object case) |

As indicated easier, all the above sentences follow the conservation law in terms of word count between original sentences and the resulting one. Besides, three different cases (subject, possessive, and object) are determined by the empty structures behind. For example, if the Subject is empty, then RP should be in subject case, and if a possessive word is empty, then possessive case is needed, so is the object case with empty object. This clearly adheres to conservation law of word count and structure components.

7. Compound RP

Compound RP is the combination of antecedent and general RP. Similarly, the compound RP strictly follows the conservation law, which can be detailed with the Table 3 below:

Table 3: Varieties of Compound RP

Antecedent \ Case	Subject	Possessive	Object
Empty (implying Person)	Whoever	Whosever	Whomever
Empty (implying Non-person)	Whichever(=what)	X	Whichever (=what)

Note that the antecedents in Table 2 are empty, and the RPs, as compound words, end with suffix [ever], which can be regarded a make-up for empty antecedent. This is another supporting fact of the conservation law. See the examples below:

9. "The man who needs it may call me." (subject case with antecedent)
10. "Whoever needs it may have it." (subject case with empty antecedent)
11. "We need a person whose major is Spanish." (subject case with antecedent)
12. "We need whosever major is Spanish."
13. "I will give you the things which you need." (object case with antecedent)
14. "I will give you whichever you need." (object case with empty antecedent)
15. "I will give you what you need." (object case with empty antecedent)

Obviously, word chunks [the man who] = whoever, [a person whose] = whosever, and [the things which] = whichever, all of which above are compound RPs. Also, note that the conditions of different cases remain the same with the general RPs. As mentioned earlier, on the basis of conservation law, compound RP = Antecedent + General RP.

Now comes the relative adverbial, as stated below:

8. Relative Adverbial (RA)

By definition, relative adverbial is itself an adverb, where there is a preposition and its object (preposition + Noun), and if the NOUN is replaced by a general RP, then preposition + general RP will constitute an RA. Still the antecedent and the structures behind the RP must be taken into account simultaneously. See the table below:

Table 4: Varieties of Relative Adverbial (RA)

Antecedent \ Case	Subject	Possessive	Object
Non-person (referring space)	X	X	Where
Non-person (referring time)	X	X	When
Non-person (referring causes)	X	X	Why

Note that the antecedents in Table 3 are all non-person, and the RPs, are without subject and possessive cases, but with only adverbials. What does RA have to do with conservation law? Again, we have learnt:

Relative Adverbial = Preposition + General RP

Examples:

16. "I saw the house *which she bought*."
17. "I saw the house *which she lives in*."
18. "I saw the house *in which she lives*."
19. "I saw the house *where she lives*."

Compare sentences 16 with 17 first, and we can find that the original sentence of sentence 16 includes *she bought the house*, and note that there is no preposition involved as the verb *bought* is transitive, but while in sentence 17, the original sentence is *she lives in the house*, a preposition is required as the verb *live* is intransitive. Now check sentence 18, and we observe that preposition *in* can be placed either in the end or in front of the RP *which*. Such a phenomenon follows the conservation law in word counts. With the equivalence of *where = in which*, (or RA = preposition + General RP), we may generalize such a findings to other RAs, such as *when* and *why*. See more examples below:

20. "She came on the date on which I got married."

(Original: *I got married on the date*.)

21. "She came on the date which you predicted."

- (Original: *you predicted the date.*)
22. "This was the date **which** she told me."
(Original: *She told me the date.*)
23. "This was the date **on which (=when)** she told me the secret."
(Original: *She told me the secret on the date.*)"
24. "This is the reason **which** she told me."
(Original: *She told me the reason.*)
25. "This is the reason **for which (= why)** she told me the secret."
(Original: *She told me the secret for the reason.*)

In principle, all the sentences above follow the conservation law. The question whether there should be a preposition or not is decided by the VRB of the original sentence. If it is transitive in relation with its object (being an antecedent when in RC), then preposition is not necessary (considered as general RP), but if it is intransitive in relation with its object (being an antecedent when in RC), then preposition is necessary (considered as preposition + general RP, being an RA).

9. Quasi-Relative Pronoun (QRP)

In fact, QRP is a varied form of general RP. The unique feature of QRP lies in its antecedents. That is, there are certain word chunks before the antecedents that may decide the choice of proper RP. Unlike other types of RP, QRP only needs to consider the word chunks before antecedent, without taking into account the relative structures behind the RP because there is no possessive case in QRP and both subject and object cases are of the same word. See the table below:

Table 5: Varieties of QRA

Antecedent \ Case	Case	Subject	Possessive	Object
With <i>such/so/the same..</i>		as	Not-exist	as
With <i>more/~er</i>		than	Not-exist	than
With <i>few/ no/ hardly...</i>		but	Not-exist	but

Examples:

26. "She is not the same girl [as] she used to be."
 27. "She asked more books than she needs."
 28. "There is no mother [but] loves her children."
 = "There is no mother [that] does not love her children."

Now, what does QRA (e.g., as, than, and but) have to do with conservation law? Before answering such a question, we need to tell the differences between General RP and QRP. Simply put, if the word chunks such as *the same, more, and no* are removed from the sentences 1, 2 and 3 respectively, then we must resort to the General RP, rather than QRP. So if the former follows the conservation law (we have demonstrated this), then the latter does accordingly.

10. Conclusion

While RP has confused and frustrated most EFL learners and teachers, the proposition of the conservation law is both intriguing and cost effective. Like other fields of discipline, the greatest contribution of a theorist does not lie in his discovery of cure-all prescription, but a tentative framework that can both soothe human suffering and stimulate cognitive endeavor in problem solving. Though this paper seeks to propose a conservation law to reduce the EFL learners' intrinsic cognitive load when learning RP, many other extraneous conditions are yet to be discussed. For example, why are certain RPs without possessive case? Why is it that the conjunction "that" can also replace "who" and "which"? Why object case PR can be omitted? All these questions may have logical reasons in the field of linguistics, but they are irrelevant to the conservation law, so we will leave them to other researchers.

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