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|  |  |  | |  | | --- | | Recreational Mathematics for Kids: Literary Devices | | |  | | --- | |  | | | Michael Lee | | Purchase Solution Manual for 1967 edition of Recreational Mathematics for Kids! From Mir Publishers in Muscovy.Children, we will defeat the capitalists with our rigorous math, our theoretical linguistics, and our very cheap books. Buy one before Stalin rises to power and get one exactly the same price! | |

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| Table of Contents  |  |  | | --- | --- | | **Title** | **Page #** | | Chiasmus | 1 | | Synchysis Clockwork | 2 | | Disjunct Joints | 3 | | Joining Conjuncts | 4 | | Tmesis | 5 | | Hyperbaton | 6 | | Litotes | 7 | | Rhetorical Question | 8 | | Simile | 9 | | Metaphor | 10 | | Alliteration | 11 | | Anaphora | 12 | | Onomatopoeia | 13 | | Hyperbole | 14 | | Apostrophe | 15 | | Enjambment | 16 | | Solutions to | 17 | | Alliteration | 18 | | Anaphora |  |   Chiasmus Ideas or structures are related by a reversal of structure (ABBA)  http://www4a.wolframalpha.com/Calculate/MSP/MSP46761dfa8i1a615516fd00001bh8gh5echga16ec?MSPStoreType=image/gif&s=48&w=88.&h=76.Math Perspective – A structure of reflectionally symmetric pairs of inner structures such that the number of distinct chiasmi is maximized. This definition is useful for considering chiasmus of higher dimensions in which the inner structures are also chiasmic and for an analytic method for verifying chiasmus by using reflection.  Let’s consider a general 2D chiasmic structure.  The square matrix is the 2D analogue of the 1D line ABBA. This particular matrix is the “most” symmetrical structure with 3 distinct chiasmi {ABBA, BCCB, and ACCA}.  Let’s see what this looks like if the inner structures were chiasmic structures:-------------------------------🡪  The colors represent the discrete structures (i.e. if the dots are the same color, they are paired together in an inner structure) and their placement in this projected matrix represents their placement in the language.    6. For a language to have an n-dimensional chiasmic structure, it means that a linguistic unitcan be generalized to some a grammatical level of n levels higher than a clause and for it to have chiasmus, all subspaces are also chiasmic. And it means that the language can be decomposed into parallel lines, planes, solids, etc., revealing the parallelism in chiasmus once we consider chiasmus as multidimensional.   Synchysis Ideas or structures are related by an interlocking or alternating of structures (ABAB) Math Perspective – The continuous overlap/interlock of structures is equivalent to the expression  (S mod [AB…] = 0),  S is the length of the Synchysis and [AB…] is the total number of distinct structures. This expression means that S is divisible without remainder by [AB…] which shows that the same number of [A] are grouped as the [B], [C], [D], …, [Z],    Here’s a cool application of this divisibility (modularity):  Imagine a circle whose radius is a Synchysis structure: [ABAB], the circle is now filled entirely with Synchysis structures. Now imagine a sphere whose radius is a Synchysis structure.      Asyndeton An omission of conjunctions between clauses and often resulting in a hurried or vehement effect.  Math Perspective – (Read Appendix I) Draw a graph of this excerpt from JFK’s Inaugural speech:  “… that we shall pay any price, bear any burden, meet any hardship, support any friend, oppose any foe to assure the survival and the success of liberty.”  Here are the rules we’ll be applying to our graph to illustrate asyndeton:   1. Conjunctions in the excerpt are BLACK vertices. 2. If there could be and should be a conjunction but there is not, represent it as a RED vertex. 3. The edges are directed forwardly in respect to the sequence of the sentence and represent the expressions between the two conjunctions. 4. The lengths of the edges are relative to the syllabic length of the connected clauses.   Polysyndeton An excess of conjunctions between clauses and often resulting in a slowing of tempo or rhythm  Math Perspective – (Read Appendix I) Draw a graph of this excerpt from Cicero’s De Senectute:  “…horae quidem cedunt et dies et menses et anni, nec praeteritum tempus umquam revertitur, nec quid sequatur sciri potest;”  Here are the rules we’ll be applying to our graph to illustrate polysyndeton:   1. Conjunctions in the excerpt are vertices. 2. If the conjunctions are the same, their vertices are the same color. 3. The edges are directed forwardly in respect to the sequence of the sentence and represent the expressions between the two conjunctions. 4. The length of the edges are relative to the syllabic length of the connected clauses. 5. One extra vertex is used to connect two pairs of vertices   Tmesis The interjection of a word or phrase between parts of a compound or between the syllables of a word  Math Perspective – Tmesis is an inversion of word order such that the inverted phrase is equivalent to the original. Take for example:  To turn on the lights  To turn the lights on  The phrase is composed of really two elements: the verb and the object, but the verb itself is composed of two elements.  Take the phrase to be a set P. P is composed of two subsets A and B. Let A be irreducible, then let B be composed of two subsets G, E. Let the function M return the meaning/semantic value of its argument.  Tmesis occurs when M is approximate over any inversions of A, G, and E,  P = {To turn the lights on}  A = { lights} B = {To turn on}  A = { lights} G = {To turn} E = {On}  There are six combinations {AGE, AEG, EAG, EGA, GEA, GAE}  In this case M is equivalent for the combinations {GAE} and {AEG}  Let’s represent Tmesis by drawing a permutation diagram and then drawing a graph for the phrase:  Pass out the paper   1. Draw directed graphs to represent the permutations of the sentence as nodes and the edges moving along the sequence of the permutation. 2. Draw a circle around each triangular graph 3. Draw a graph    1. The center of each permutation graph’s circle will be a node    2. Color each node green if it makes sense, red if not    3. Connect all green nodes with blue arcs   Hyperbaton Departure from normal word order for the sake of emphasis  Math Perspective – For hyperbaton to be valid, the inversions of the phrase must 1. Make grammatical and/or semantic sense 2. Be a distinct permutation 3. Have a shift in emphasis and 4. Violates conventional grammar. Consider the English language, there are four ways of permuting to satisfy the conditions above for a general English sentence of Subject, Object, Adjective, and Prepositional phrases:   1. Verb before Subject. 2. Noun before its Adjective. 3. Object before Verb 4. Prepositional Object before Preposition   Let’s represent this by drawing a graph for the sentence:  The angry boy punches the wall   1. Draw directed graphs to represent the permutations of the sentence as nodes and the edges moving along the sequence of the permutation. 2. Draw a graph    1. The center of each square graph will be a node    2. If the sentence made from the permutation makes sense, color it green, if not red    3. Connect all green nodes with black arcs   Litotes Deliberate understatement, especially when expressing a thought by denying its opposite  Math Perspective –The definition of litotes can be simplified to be what are called “double negatives”. A double negative is a phrase that uses two or more forms of negation. The phrase can either resolve to a weakened positive or a strengthened negative.  Let’s represent this using a “tree” diagram”   1. We start off with a word of negative value (red) 2. We connect it to a positive (green) and negative value (red) 3. The line we connect the true or false is blue if it resolves to a positive or a negative.     Rhetorical Question A question asked for a purpose other than to obtain the information the question asks  Math Perspective –  In computer science, computers “talk” using a strings (packets) of numbers. The computer “understands” by breaking the packet down into structures and then “respond” by creating another packet based on the packet they received. But how do they know what structure they should break down the packet? A packet always starts with a header that tells the receiver how they should respond. Let’s draw the “conversation” between two computers. | |  |  | | --- | --- | | Preface  “Mathematicians are like Frenchmen: whatever you say to them, they translate it into their own language, and forthwith it means something entirely different. -- Goethe  This text attempts to abstract, generalize, and reduce the definitions and usages of literary devices to their more precise mathematical counterparts so that the reader can visualize the language using different media. After having read the text, the reader should be able to observe and manipulate a language’s literary devices with more mathematical and linguistic facility to produce more insightful conjectures and applications.  This text is based on a series of booklets/magazines on recreational mathematics for children from the Soviet Union whose rigor of theory and variation of applications were hopefully preserved in this adaptation. Now without further ado:  “The proofs of the following have been left as an exercise for the reader: |  | | |  |  | | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Higher Dimensional Chiasmus |   **How do you interpret this structure linguistically (e.g. in Latin)?**   1. What are the inner chiasmic groups? 2. What dimension is the original chiasmic structure? 3. What if inner structures shared common elements? 4. **What does it mean for a language to have an n-dimensional chiasmic structure?**   Synchysis Clockwork  **http://media1.shmoop.com/images/geometry/geo_8_sec_6_graphik_3.png**  **What is the application and significance of Synchysis’ modularity to linguistics (e.g. Latin)**?   1. What happens to the modularity of the n-Sphere if there is a distinct pair Z that envelops the Synchysis radius (i.e. R = ABABABZ)? 2. The circle generates along its verticals and horizontals Synchysis structures. What is so special about the circle and its n-dimensional analogues? 3. **How might you be able to use Synchysis structures to decrypt an unknown language?**     Disjunct Joints  **How do you interpret its network flow and its shape and structure for their respective languages?**   1. What can we tell about the conjunction of correlative conjunction? 2. From their shape, what effect does the amount of conjunctions have on the elocution? 3. From the graph’s structure and shape, how do the conjunctions affect inflection?   Joining Conjuncts    **How do you interpret its network flow and its shape and structure for their respective languages?**   1. What can we tell about the conjunction of correlative conjunctions? 2. From their shape, what effect does the amount of conjunctions have on the elocution? 3. From their structure and shape, how do the conjunctions affect inflection?     T’ngential Tmesis  A:  B:  A:  B:  A:  B:  A:  B:  A: |
| Simile An explicit comparison between two objects usually employing “like” or “as”Math Perspective – There is no further abstraction of this definition, a comparison of two objects is just that. However, we can still have some recreational mathematical fun. An analogy is the transfer of the meaning of one object to another. How can we form analogies with similes? A to B is as C to D, the comparative value is transferred over from one comparative simile to another. For example: The pen is to ink as the pencil is to lead  But is ink to the pen as the pencil is to lead?  Or is the pen to the pencil as ink is to lead?  Or is ink to lead as pen to the pencil?  Or is pen to lead as pencil to ink?  Now we see how a simile can be formed using objects of many objects but there doesn’t seem to be any difference if we permute the comparative sets.  Let’s represent this by drawing permutation graphs as before for pen, paper, ink, and lead as nodes and connected with edges if they are the same comparison.  Metaphor A comparison made by referring one thing to another.  The president is the captain of the ship of state.  Math Perspective – The comparison is made by referring the ship as a state and the president as a captain. The president is the leader of the state and the captain the leader of the ship. This is just like an analogy. The president is to a captain as a state is to a ship. And the metaphor involved is the connection between the elements of the subsets in the simile comparison.  Let’s represent this by drawing permutation graphs as before for president, captain, ship, and state as nodes and connected with edges if they are the same comparison. |  |