**The Magical Organization of Statistics: Structural Analysis of Rosling’s Presentation**

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“200 countries, 200 years, 4 minutes,” a presentation given by Hans Rosling, a Swedish epidemiologist and “myth-debunker,” who spent his career correcting false preconceptions about the developing world and in whose hands- data used to sing, was aired on BBC Four on 26 November 2010, in the program called “-The Joy of Stats-.” In this presentation in a sport’s commentator style Rosling used augmented reality animation and huge quantities of public data to reveal the past and present relationship between health and wealth around the globe. His way of presenting data and the arrangement of contents are equally impressive in which the most pertinent and cogent material has been chosen and meticulous attention has been given about allotting time on each parts of organization of the presentation. His presentation is an excellent example of understanding how an audience should be informed as well as ingratiated with simple but appealing words in few seconds, how in a concise way the audience can be informed about the background of any subject, how to find balance and establish proof for arguments by both facts and figures and storytelling in any persuasive discourse or presentation and how the audience should be left with an apparent question mark but with a positive lasting effect. In this report, Rosling’s magical structural organization of contents in the form of exordium, narratio, confirmatio, and peroratio with the superimposed and multidimensional graphical representation will be analyzed thoroughly.

**Rhetorical Situation**

The rhetorical situation is the context of a rhetorical event that consists of an issue, an audience, a speaker or orator, a set of constraints i.e. producing unconscious limitations for subjects in society and an exigence i.e. an urgent need.

**The Speaker and The Background**

The speaker of this presentation was Hans Rosling. Hans Rosling was a Swedish physician, statistician, and public speaker who was born on 27July 1948 and passed away on 7February 2017. He was the Professor of International Health at Karolinska Institute and was the co-founder and chairman of the Gapminder Foundation, a non-profit venture registered in Stockholm, Sweden. This foundation developed the Trendalyzer software system that made “moving bubble charts” possible and popular and promoted sustainable global development and achievement of the United Nations Millennium Development Goals by increased use and understanding of statistics and other information about social, economic and environmental development at local, national and global levels. He held presentations around the world, including several TED Talks in which he promoted the use of data to explore development issues. Rosling had a passion and gift for making complicated data interesting and comprehensible for his audiences. According to him only having the data was not sufficient but one had to show it in such a way that people both enjoyed and understood (BBC, 2010).

“The Joy of Stats” as described by BBC Four website as a “documentary which takes viewers on a rollercoaster ride through the wonderful world of statistics to explore the remarkable power they have to change our understanding of the world” (BBC, 2010), and it was a 60-minute program within which Rosling told the story of the 200 countries over 200 years using 120,000 numbers in just 4 minutes. This program was filmed in Stockholm, Sweden, produced by Wingspan Productions and distributed by BBC Four. Previously a similar breakthrough presentation on showing correlation between life expectancy and income per person and statistical analysis of improving global health, was given by Rosling in 2006 on a TED Talk (Technology, Entertainment, Design), devoted to spreading ideas usually in the form of short and powerful talks (18 minutes or less), but that time he did not use augmented reality animation. Augmented reality is an interactive experience of a real-world environment whereby the objects that reside in the real-world are augmented or added to by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory and olfactory. In simple words, it is the combination of real and virtual (computer-generated) worlds where this technology superimposes a computer-generated image on a user’s view of the real-world, providing a composite view. Animation is the technique of photographing successive drawings or positions of puppets or models (in this case bubbles signifying countries) to create an illusion of movement when the movie is shown as a sequence. Also, this time the motion chart was not projected on a screen like 2006 TED Talk and the data was CGI’d (computer generated imagery creating special visual effects) into the air where he could pluck and grasp at points as he highlighted the significance of specific points in history.

By taking a closer look at Rosling’s career such as the beginning of his extensive career as a physician; his spending many years in rural Africa tracking a rare paralytic disease named konzo and discovering its cause which was associated with hunger and badly processed cassava; his co-founding with doctors without borders in Sweden; writing a textbook on global health and working as a professor at Sweden’s Karolinska Institute where he initiated key international research collaborations; and also his personally arguing with many heads of state including Fidel Castro; it can be said that this presentation perfectly fitted his life and body of work.

**Exigency**

His 2006 TED Talk was driven by his two discoveries from the results of a survey which he conducted in UK. The first one was that many people were not aware of even the most basic facts about global health and global development, not to mention global life expectancy and success of delivering global healthcare services. The second one was that the lack of factual knowledge was not because people were not interested in global development, but because it was too hard for those that wanted to know about global development to access this knowledge. These two insights led Rosling to fight this “devastating ignorance” and make the mission of bridging that gap and conveying research on global development through public talks like TED talks and the use of data visualization. According to Hans Rosling, “without statistics we are cast adrift on an ocean of confusion but armed with stats we can take control of our lives, hold our rulers to account and see the world as it really is.” His urgency to present the later presentation in 2010 was to dispel common myths about the so-called developing world which he mentioned was no longer worlds away from the west but in fact most of the third world was on the same trajectory toward health and prosperity. Many developing countries were moving twice as fast as the west did. Also, he wanted to present his data with moving bubbles and flowing curves that made global trends clear, intuitive and even playful and to narrate the animations with a sportscaster’s flair.

**Audience**

Although at first glance his intended audience seemed to be the viewers of the program called “The Joy of Stats” which could be called his “immediate” audience but with a closer look it could be understood that his presentation had a larger and broader audience who could be that UK public who did worse than chimpanzees in Rosling’s “ignorance survey” conducted before 2006 or his students who also were ignorant of the facts of global health or possessed biased views of the world or the general mass of the world who was challenged by Rosling for their preconceived ideas of the correlation between global health and income or the state of progress in the world. This larger audience could be called his “extended” audience.

**Kairos**

Kairos refers to the propitious or opportune moment to do the right things or to take right decisions or to say the right words at the right or proper place after taking into consideration the “rhetorical situation,” i.e., the circumstances or situations that opens up favorable and opportune moments. For Hans Rosling’s presentation, Kairos was favorable because of his conducting an ignorance survey before 2006 in the UK as a result of which the general mass of people started to identify their preconceived ideas about global problems. The foundation of Gapminder software and 2006 TED conference talk had already inspired more than 11 million people in Rosling’s native Sweden and elsewhere to watch a talk on health statistics and play with the software. Before this particular presentation, he had given talks on various global problems such as child mortality, population, diseases like HIV and so on which had already set the ground for majority of the people who were in the frame of mind to take interest in these global problems and identify the trends. Moreover, his unprecedented use of augmented reality for presenting data visualization created that favorable moment when the boredom of data gave away to moving bubbles on his graphical presentation and his being a part of the graph. He was able to convince even his opponents to accept the real-world scenario within 4 minutes. This could be suggested by the number of viewers of his presentation and number of times people viewed the presentation. This particular talk has been watched more than two million times on YouTube. 112 IMDB users gave a weighted average vote of 7.3/10 for his presentation.

**Setting**

Rosling’s presentation was shot in Sweden probably in a flat or studio which relatively looked very ordinary and gloomy. No visible furniture was there but on the first floor of that flat or studio some technical equipment could be seen like camera, a software which was actually the animating software produced and developed by Hans Rosling with the collaboration of Gapminder foundation, some laptops, technicians and cameraman, some other technical crews and observers, and certainly Hans Rosling himself and the performance space where he was giving his presentation using augmented reality animation. The whole area of his performance was dark except some flashing light coming from windows and bulbs fitted beside and behind him. As Rosling’s agenda was to break the preconceptions of the audience about global health and per capita income, and thus bringing their ideas from dark to light, Rosling shot his presentation in that kind of gloomy ambience where the darkness signified the ignorance of mind or ideas and those flashing lights signified the dispelling of presuppositions. Another reason could be that he wanted his audience to mainly focus on the presentation he was giving rather than distracting them by splendid and fancy surroundings.

**Brief Outline of Structure of Rosling’s Spoken Content**

Exordium (00:04-00:29)

* Introduction of the speaker
* Information about data visualization
* Introduction of augmented reality animation

Narratio (00:29-00:01:29)

* Graphical representation
* Introduction of 200 countries in 200 years
* Population of 200 countries
* Lifespan and income of people of 200 countries in 1810

Confirmatio (00:29-03:58)

* Impact of historical milestones such as industrial revolution, First World War, the Spanish Flu epidemic, the Great Depression and Second World War
* Significance of the year 1948
* Convergence of developing countries with developed countries
* Inequalities within the province

Peroratio (04:01-04:43)

* Positive hope for the future
* Restatement of facts and figures showing the overall conditions of 200 countries in 200 years

**Exordium**

Exordium is the opener, the attention-getter, the part of the argument that reaches out to the reader or listener and grabs him or her by the buttonhole. The exordium, or introduction, “informs the audience of the end or object of our discourse” and “disposes the audience to be receptive to what we say,” (Corbett & Connors, 1999, p. 260). So, this part warms up the audience, establishes goodwill and rapport with the readers.

In Rosling’s presentation, 00:04-00:29 minutes, which represented 5% of the whole presentation, served as exordium and in between this time, Rosling was seen to climb up a set of stairs and it could be assumed that just after entering the building, Rosling started to walk up to the stairs. At this point of time, a voice-over was playing from background and Rosling was not seen to talk till 00:29 minutes. But, it could be assumed that the voice of the narrative was Rosling’s, as the statements during this part of the video were not in passive voice and narrated by someone else but he himself was informing the audience that he taught global health and he was going to try something that he had never done before i.e. animating the data. By these two statements, he not only made the audience aware about what his end or object of the presentation would be, but he made his audience favorable by establishing the credibility of his presentation, as his expertise in global health and his inclination for visualization made him trustworthy in front of the audience. Also, he began with saying, “visualization is right at the heart of my own work too” and by this statement he communicated the audience that he was going to use data visualization technique in this presentation. Data visualization can be described as any effort to help people understand the significance of data by placing it in a visual context and from this patterns, trends and correlations that might go undetected in text-based data can be exposed and recognized easier. He not only talked about what his object would be or what he was going to do in these 4 minutes, but he gave an idea how and with whose support he was going to accomplish his end. He said that he would take a bit of technical assistance from the crew and while he was saying that, in the video during 00:16-00:18 minutes a technical crew was seen taking notes and during 00:24-00:28 minutes couple of people were seen to be observing and cameraman seemed to be fixing his camera. So, the whole scenario served to warm up the audience, give an idea about the setting and the people who would be around during the whole presentation. Here, Rosling established ethos i.e. persuading the audience via the credibility and authority of the speaker, by mentioning that he taught global health and by giving credit to the technical crew members and at the same time showing them in the video, he established his moral character and judgment, which helped him to set up a goodwill with the audience.

**Narratio**

The statement of fact or narratio section is about informing the readers of the circumstances that need to be known about any subject (Corbett & Connors, 1999, p. 271). This is the part that is designed to bring the audience quickly up to speed and put him or her on a ground of knowledge that will help understanding of the topic of discourse.

In Rosling’s presentation, 00:29-01:29 minutes served as the narratio part where he not only made the audience aware of the graphical representation he was going to use to show the data animation, but he demonstrated how he was going to explain the relationship of life expectancy and per capita income of 200 countries in 200 years while entering from the exordium smoothly. He knew very well that these two dimensions should be known by the audience; otherwise it would be difficult for the audience to delve into the subject matter of his presentation. This part seemed to take place in a flat or studio where ambience was quite dark except little flashing light coming from the bulbs set behind and beside Rosling and the windows.

With the superimposed graph i.e. the graph with augmented reality appearing on the screen, Rosling started this part of narratio with the statement, “So, here we go: first an axis for health………..and down here, an axis for wealth”. So, here he plotted life expectancy against income of a person in which Y-axis represented the life expectancy and X-axis represented the income. He explained the graph thoroughly, so any novice could understand who was not from statistics or mathematics or physics field what he was trying to explain. He did not devote too much time for this narratio part, which represented 22% of his presentation, as he knew how much information should be sufficient for the audience to get into the subject matter and he had many more things to say that could prove his proposition in later part of the video. Plotting can be referred to as a graphical technique for representing a data set, usually as a graph showing the relationship between two or more variables. The plot can be drawn by hand or by a mechanical or electronic plotter. From his presentation, it could be assured that the plot was drawn by electronic plotter. Life expectancy can be referred to as the length of time that a living being, especially a human being is likely to live. Income can be defined as a gain or recurrent benefit usually measured in money that derives from capital or labor. He plotted these two variables of life expectancy and income on a scatter plot or a bubble chart which used a collection of points placed using Cartesian Coordinates to display values from two variables and from this scatterplot or chart one could detect if a relationship or correlation existed between two variables, by displaying a variable in each axis. On the Y-axis i.e. the vertical axis, Rosling placed lifespan, a quantitative variable, with the three data points 25, 50 and 75 years proportionately distanced and on the X-axis i.e. the horizontal axis, he placed income, another quantitative variable, with again three data points $400, $4000, and $40000 proportionately distanced. He started the lifespan data point from 25 years as he assumed that the minimum lifespan of any human being should be 25 years and that was the reason he did not start the graph from the intersection of zero. The reason behind his placing income on the X-axis was that it was independent variable as it was not dependent on lifespan and lifespan on Y-axis was that it was dependent variable as it might vary with the income and Rosling wanted to show the correlation between how per capita income affected the lifespan. During 00:47 to 00:50, with the appearance of “poor and sick” on the left bottom quadrant of graph, he pointed out that category belonged to those who had income between $400 to $4000 and during 00:50 to 00:52, he pointed out that “rich and healthy” category belonged to those who had income of at least $40000 or more which appeared on the right upper quadrant of the graph. So, interpolation, value inside the set data points had been shown by him for the case of “poor and sick” and extrapolation, value outside the set data points, had been pointed out for the case of “rich and healthy”. After that he started talking about the conditions of 200 countries in 200 years and at first during 00:53 to 00:59 he took his audience back to 200 years ago. During 00:54 to 00:57 “poor and sick” and “rich and healthy” sections disappeared and at 00:59 the year 1810 appeared on the screen. The reason for disappearance of “poor and sick” and “rich and healthy” was that those parts were just representing which income level could be called as poor and which could be called as rich. But, in 1810 he wanted to start afresh to show what the conditions were in that time. His agenda was to illustrate how circumstances changed over 200 years, so he started with 1810 as during the data collection time he was in 2009. During 01:02 to 01:10, with his fingertips, five different color-coded bubbles appeared representing five different continents according to Rosling. Interestingly, he did not go for the conventional color coding used for continents in Olympic rings but chose random color for each continent to go beyond the conventional and also it showed his authority and intension to apply free will which was quite prevalent throughout his presentation. Then one red-colored bubble suddenly appeared during 01:10-01:13 and he by pointing out the size of the bubble conveyed that it represented the size of the population. So, by this explicit explanation, anyone could understand that African and Middle Eastern countries had small population whereas Asian countries were distinguishable because of its large size indicating large population in 1810. The distinct size of Asian countries could be the reason why Rosling chose the red bubble to say what the size of the bubble referred to. There were a total of 200 bubbles or circles as they were representing different countries within the continents such as Asia got 48 countries, America had 23 countries, Middle east got 22 countries, Africa South of the Sahara got 57 countries and Europe got 50 countries. Another important point to be noted that most of the countries were lacking enormous wealth and long lifespan as all the bubbles were located in the left bottom quadrant of the graph where life expectancy was below 40 years and income level was pretty low. At around 01:21 minute, a grid line appeared horizontally flashing with the number 40 which indicated that the lifespan of most of the countries were below 40. During 01:23 to 01:27 UK and Netherlands sprang up from those crowded bubbles separately to prove its better conditions in terms of life expectancy and income. During the whole time of narratio part until 01:29 all the bubbles were stagnant, not moving, which indicated towards miserable conditions of most of the countries in 1810. In this part, temporal dimension of the graph was represented by only the year 1810 and the spatial dimension of the graph was represented by those stagnant bubbles representing different countries, mostly placed in the left bottom quadrant of the graph with few exceptions.

**Confirmatio**

The confirmatio is the “part where we get down to the main business of our discourse,” (Corbett & Connors, 1999, p. 276). When the speaker or orator makes a claim and seeks to convince the audience the truth of that claim, he or she resorts to confirmatio which are kinds of proof that backs up claims with evidence and example or reasoning.

In Rosling’s presentation, confirmatio part occupied major part of his presentation and it started from 01:29 and ended at 03:58, so it could be said that 52% of his presentation was devoted to confirmatio. He started this part with saying, “And now, I start the world” and established ethos by showing his authority. His statement of starting the world indicated towards his authority mixed with pride as if he was able to create the world or world could move in the direction of his fingertips and also this statement served as the turning point of his presentation by taking the audience from information or theory to practical experience or visualization. From this time the animation began, and the bubbles started moving from left bottom quadrant towards right-upper side of the frame of the graph with few countries crossing the lifespan of 50 years and income level of $4000 signifying the beginning of the industrial revolution. Perhaps Rosling here tried to show that before industrial revolution most of the countries’ conditions were stagnant and after the revolution most of the countries started growing up. His pulling the bubbles up towards him at 01:30 signified as if after 1810 with industrial revolution most of the countries started recovering from their miserable condition and moving towards the bright future. With his popping the bubbles up indicated towards breaking the prejudgments of the audience about the world. After that he applied a strategy of walking his audience through the well-known facts that one could easily relate with and prepared them to accept the less well-known or foreign arguments. He explained different movements of different countries by correlating them with various historical significant events besides industrial revolution such as World War I, the Spanish flu epidemic, the Great Depression and World War II and how those calamities affected the income and life expectancy of the countries involved. All these historical milestones were quite familiar to the audience; he just made the audience remember those events, but his real agenda was to break the preconception of most of the people, who held the views that apart from Western countries most of the other countries were developing, by introducing the world after 1948. For better clarification, he slowed down the bubbles at 01:55 to show how the war and epidemic impacted the growth of most of the countries and at 01:57 almost all the bubbles were non-moving which signified the disastrous effect of those events. Then again, his speeding up from 01:58 and moving the bubbles at 02:09 indicated towards most of the countries’ recuperating from disaster. Another point could be also noted here that keeping in mind the main agenda of confirmatio part which was to keep the audience engaged throughout the discourse or any presentation without losing attention, he felt the need to speed up from 01:58 by showing how most of the countries survived disastrous events like the Great Depression and Second World War and how different time periods affected different points. During this time, he also changed his position by moving towards the Y-axis where his pushing the bubbles towards the right upper side indicated the movement of those countries, despite having catastrophic condition, towards healthier and wealthier lives.

After speeding up for some time and passing through some years, Rosling reached and stopped during 02:19 to 02:23 when all the bubbles became stagnant and he pointed out 1948 to be a great year when he said that “the war was over, Sweden topped the medal table at the Winter Olympics, and I was born.” The first two reasons seemed to be logical as he applied logos (reasoning by logic) here with full syllogism (part of deductive reasoning which uses a major premise and a minor premise and a conclusion). For instance, war was not great; in 1948 war was over; so, 1948 was great year. His third reason of his referring to birth year at first glance might seem to show his pride, arrogance and egotism, but with deep contemplation it could be argued that his referring was to distract the audience a little bit from all those catastrophic events which could be painful to visualize sometimes and hold their attention by reducing the seriousness of the ambience with a bit of humor and jocularity. This served as his arranging his presentation in an effective way, sometimes by emphasizing the gravity of the situation and sometimes lessening the gravity of the situation by giving comfort and space to the audience. Besides, he chose to stop in 1948 because at 02:30 he wanted to give life to the trend line of the scatter plot when all the data points i.e. the countries were scattered all over the graph and there was huge difference among the countries in terms of income and health such as the United States was way more ahead of all Asian countries but Japan was struggling to cope up and Iran although was getting better but continued with short lifespan and most importantly it was difficult to show any positive or negative correlation among the countries due to their uneven growth and wide dispersal during this time. His dwelling on a single topic of 1948’s impact and stagnancy of the bubbles for 37 seconds which was the longest duration in his presentation for talking about one topic, as he was seen to move from one topic to another pretty quickly, served his conscious or subconscious agenda of making the audience prepared for the less well-known facts and breaking some people’s biased views about developing countries.

So, continuing with his strategy, he was all about to introduce the other side of the coin i.e. how developing countries were giving competition to the developed countries in terms of wealth and lifespan in contrast to 1948 at 02:52 when again the animation started. Rosling stated, “Here we go again,” and the data points came back to life (BBC, 2010). From 02:52, again the animation started and Rosling was seen to pull up the bubbles representing Asia, Latin America etc. which were way behind the Western countries, which signified moving from “poor and sick” to “rich and healthy”. He continued to show the progress of developing countries while pointing out the reverse progress of Africa due to civil wars and the HIV epidemic. After that he came to a pause for few seconds at 03:22 when he suspended the animation to give his audience sometime to contemplate and visualize the data points which for the first time was showing some correlation by closely situated around the trend line in terms of lifespan and income of 200 countries on the frame and grid of the scatterplot as before this time all the data points were widely dispersed. He then explained how almost all the countries had raised themselves from dark side of “poor and sick” to bright side of “rich and healthy” by stating “Most people today live in the middle”. Being a shrewd and sharp-witted person, he knew the minds of audience and considering that he in order to show the difference between “the best-off” countries and “the worst-off” countries in terms of “huge inequalities”, which could be difficult for the audience to comprehend as the bubbles showed country averages, he at first at 03:30 with his fingertips showed where the “best-off countries” and the “worst-off countries” existed within graph and for better understanding of the audience he took one example of “best-off countries” i.e. Luxembourg and another example of “worst-off countries” i.e. Congo and later he broke the countries into regions particularly emphasizing on China symbolizing red circle or bubble being one of the countries of Asia. He stated, “Take China, I can split it into provinces. There goes Shanghai. It has the same wealth and health as Italy today. And there is the poor inland province Guizhou. It's like Pakistan and, if I split it further, the rural parts are like Ghana in Africa,” (BBC, 2010). Another strategy of “moving from the general to the particular” (Corbett & Connors, p. 277, 1999) about the confirmatio of his presentation could be noted here. He could have broken the bubble earlier in his presentation or done it often throughout the video, but he decided to stick to the “general” i.e. the bubble representing the whole country and then he split into “particular” i.e. regions within the country. Another reason for this strategy could be that his main intended audience was not only the people who were related to his field or related fields like statistics, epidemiology, mathematics and so on, but he wanted to present his data keeping in mind the audience from all spheres. So, he did not want to overwhelm the audience with mindboggling data which could eventually run the risk of losing audience’s attention.

So, throughout the confirmatio part, Rosling was seen to change his position within the frame of the graph or sometimes was noticed to come from behind the graph, and sometimes bubbles were seen to come in front of his face, in order to become the part of graph eventually giving it a realistic look and life, and to show from different view or different points of the graph how the countries looked like in terms of lifespan and income. This was one of his organizational schemes of presentation as he was directing the bubbles from different positions like a theatrical director who gave direction to the actors on the stage. So, here the bubbles i.e. different countries were representing the actors and he was the director of that plot. Also, during this time, sometimes some bubbles were moving very fast indicating faster rate of growth in terms of health and income and some bubbles were moving slowly sometimes indicating slower rate of growth. The whole animation occurred on a series of horizontal and perpendicular lines that divided the graph into small squares to form a grid by means of which any point might be located by a system of rectangular coordinates. Those grids were located on the frame of the graph. The moving chronology from 1810 to 2009 with pauses and replays indicated towards the temporal pattern of the scatterplot and the moving up and down or sometimes right and left of the bubbles representing different positions of different countries on the frame and grid of the graph indicating the spatial dimension of the scatterplot.

He devoted so much time as mentioned earlier i.e. 52% for confirmatio part, as he wanted to present the claims and evidence that substantiated the background information that he had given in the narratio part. In this part, he used logos (artistic means of persuasion through logical appeal) particularly in the form of reasoning, facts and examples such as ups and downs of 200 countries in different phases of calamities, converging developing economies with developed economies with proper statistical figure, the situation of almost the whole world in the year of 2009 in terms of health or lifespan and income or GDP and so on. Also, he did not resort to refutatio that was related to considering the possible opposing arguments and disproving it, so he spent most of his time to establish his own arguments sometimes moving from general to specific and sometimes from familiar to unfamiliar topics.

**Peroratio**

According to Corbett and Connors, the peroratio “stands in the final position of the discourse” and is “the part that lingers longest in the memory,” (Corbett & Connors, 1999, p. 283).

The final part of Rosling’s presentation was the peroratio or conclusion which started at 04:01 and ended at 04:40 representing 8% of the total presentation that was not very long. From 04:01, agitation started among the circles with the appearance of “action replay” on the screen and with that Rosling started to say, “And yet, despite the enormous disparities today, we have seen 200 years of remarkable progress” (BBC, 2010). He took the exit by making the audience recapitulating what had happened in 200 years while on the graph again 1810 appeared and with a moving chronology of years it stopped at 2009 or rather what he had presented until then in his presentation which was evident by the appearance of “action replay” on the frame. His mentioning of “remarkable progress” was substantiated by agitation or fast movement of bubbles representing countries. After that, at 04:14 he suspended the animation completely as by that time that was in 2009 when the historical gap between the western and eastern countries diminished and positions of all the countries in the graph indicated towards an “entirely new converging world” (BBC, 2010). It could be also argued that he stopped the motion because all the countries that time were not moving unevenly towards healthy and wealthy lives, but they were moving at a constant pace and also, he wanted to show how a positive correlation existed between two variables that were lifespan and income. Positive correlation indicated that increase in income in countries could increase the lifespan of the people residing in those countries. In other words, according to Aristotle’s four things in conclusion (Corbett & Connors, 1999, p. 283-284), he amplified his points that were made in the previous section of confirmatio, and he inspired the audience by showing the positive trend among different countries in the world during 04:15 to 04:18 when the word “future” appeared on the screen and concluding the presentation with a positive note full of hope and optimism, stating, “I see a clear trend into the future. With aid, trade, green technology, and peace, it's fully possible that everyone can make it to the healthy-wealthy corner,” (BBC, 2010). Lastly, Rosling concluded the presentation by summarizing where and in which condition the countries started before 200 years, how their overall journey was through 200 years, where they were in 2009, where they would probably move in the future, and how 1,20,000 numbers were used in his plotting. He knew that his main audience was going to be someone who would not be persuaded by emotions, so instead of using pathos (emotional appeal) he tactfully used and established logos in his conclusion by presenting facts and figures, and to fulfill the agenda of conclusion i.e. to make this part linger in the mind of the audience he ended his presentation with a question mark that would compel the audience to think about it again and again and come back to watch the video time and again by saying, “Pretty neat, eh?” Like his throughout presentation, he established ethos as well here by showing his neat calculation and establishing his credibility with the audience.

**Branches of Rhetoric and Related Special Topics**

There are three branches of rhetoric, namely deliberative, forensic and epideictic according to the classical rhetoricians.

* Deliberative (political, legislative, hortatory, advisory)
* Forensic (legal, judicial)
* Epideictic (demonstrative, declamatory, panegyrical, ceremonial)

Deliberative rhetoric deals with the convincing people in a specific direction and eventually makes them adopt a specific course of action. Therefore, the means to persuade the audience taken here are “exhortation,” i.e., pushing forward someone to take some action for their good and “dehortation or dissuasion,” i.e., discouraging someone to take certain actions as those actions can be harmful. Throughout the presentation, Rosling although did not directly influenced the audience to take some action or dissuade from an action, but he tried to persuade the audience to get rid of cognitive biases about global health and those ideas which suggested that the world as a whole was not making progress. He made use of past facts and figures about how 200 countries survived in the midst of calamities and how both developing and developed countries emerged as a converging global economy over the years and then he indicated towards the future positive trend which was about accepting the idea of the overall progress of the world in terms of lifespan and income and dissuading from the thought that overall living conditions were not improving. Here, he indicated towards what the future course of ideas should be held by people and what course of actions should be taken for the continuous progress of the world (implicit connotation). So, he used the special topic ‘expedient’ or ‘advantageous’ as his idea would be beneficial or convenient for overall society which was quite fitting the definition given by Corbett and Connors (1999 for deliberative discourse appeals to “(1) the worthy or the good and (2) the advantageous or expedient” (p. 121). Also, his public speaking whose audience was diverse fell under Aristotle’s civic occasion of deliberative discourse.

Forensic rhetoric which is commonly known as ‘legal’ or ‘judicial’ discourse considers fairness or unfairness of a particular allegation or charge. Rosling did not resort to this branch of rhetoric as his agenda was not to prosecute or defend any case and he was also not dealing with any serious crime or offense, but he only wanted to establish his viewpoints by changing the mindsets of the audience with his datasets. Due to the same reason that he did not want to praise or blame anyone but wanted to share his viewpoint and eventually made the audience conform to that, he did not use epideictic rhetoric which did not deal with compelling or convincing others to take up certain actions, but it was mainly associated with praising or blaming someone, marked by its flowery language and mostly used in funeral oratory, encouragement in crisis, literature, celebrations, letters of recommendation etc. marked by formality.

**Thesis and Genre**

Rosling’s explicit thesis statement could be found in his conclusion or peroratio part where he stated that “Well, what you’ve just seen in the last few minutes is the story of 200 countries shown over 200 years and beyond. It involved plotting 120,000 numbers.” This statement served as summarizing the main point of his presentation which was all about walking the audience through different phases in terms of life expectancy and income of 200 countries in 200 years in the midst of calamities and overcoming the aftereffects while moving towards progress. This statement also indicated why his presentation was important and worth watching considering the fact that nobody ever before used this kind of visual statistics which involved so many numbers what for anyone was difficult to comprehend within 4 minutes.

Although Rosling was giving presentation on statistics that was a technical subject, but he used augmented reality. Therefore, he did not only stick to the category of technical subject, but he went beyond that. So, it could be argued that his presentation belonged to the genre of “augmented reality” and he followed some of the conventions of this genre. Augmented reality (AR) is an interactive experience of a real-world environment whereby the objects that reside in the real-world are "augmented" by computer-generated perceptual information, sometimes across multiple sensory modalities, including [visual](https://en.wikipedia.org/wiki/Visual), [auditory](https://en.wikipedia.org/wiki/Hearing), [haptic](https://en.wikipedia.org/wiki/Haptic_perception), [somatosensory](https://en.wikipedia.org/wiki/Somatosensory_system), and [olfactory](https://en.wikipedia.org/wiki/Olfactory). The application of augmented reality can be found in media, mobile phones, entertainment, games, design, architecture, art, education, tour guides, retail, training, maintenance, manufacturing, healthcare, military, advertising and so on where three-dimensional (3D) images of virtual objects are integrated into a real-world workspace sometimes to assist men and women as they make repairs in the field which is used in military AR, sometimes to prepare for strategies which is used in medical AR and so on. He followed the convention of integration by bringing the components of the digital world into a persons’ perception of the real-world and did so not as a simple display of data, but through the integration of immersive sensations that were perceived as natural parts of an environment.

Another convention of AR is that it alters one’s ongoing perception of a real-world environment. Rosling followed this convention too by using overlaid sensory information in a constructive way i.e. making additive to the natural environment and seamlessly interweaving the sensory information with the physical world that could be perceived as an immersive aspect of the real environment.

Another convention of AR is the enhancement of natural environments or situations which offer perpetually enriched experiences. He used this convention by adding computer vision in the form of scatterplot and object i.e. years, countries, lifespan, income etc. recognition in order to make the surrounding real world in terms of lifespan and income of the user interactive and digitally manipulable.

. **Conclusion**

What makes Rosling’s presentation so well-known is its use of augmented reality animation and narration to highlight different stories within the overall data. His narration of the fluctuation of different countries and regions within countries over 200 years is required, as there is no other description or explanation to establish his argument. Although his interactive visualization chart serves to engage the audience throughout the video, still it would have been better if it is possible to select a particular year or region or country from the chart. Like his animation chart and data visualization technique, his organizational scheme of the whole presentation is equally effective as while arranging his materials he consciously or subconsciously has taken certain judgments and decisions into consideration. Firstly, he has carefully chosen the nature of his presentation which is evidently deliberative, and the inherent qualities or features of his presentation which is all about showing the fluctuation and progress of 200 countries over 200 years and its current situation and huge quantities of public data what he has plotted on visualization chart. Secondly, his own ethos which he establishes throughout the presentation to give an idea to the audience about his non-biased attitude and capability of taking sound judgment, and the nature of the audience which can be divided into two parts i.e. immediate and extended have been taken into consideration. Apart from that his sound judgment of devoting maximum time for confirmatio and short time for another part of organization that is exordium, narratio, and peroratio is commendable as it not only helps to hold the audience’s attention throughout the video but also it helps him to establish his arguments thoroughly. His engaging and charming personality aids in developing a rapport with the audience and his technique of presenting data makes it possible for topic like enormous data or statistics to get rid of its boredom.

We can learn from watching his video about a persuasive dispositio that begins with establishing authority of the speaker and rousing interest among the audience by conveying the major takeaways of the presentation (animating the data in real space), continues with periodical silence and pause to give the audience a chance to digest the enormous and overwhelming data by telling stories from history, progresses with various tone modulation to emphasize on key words what the audience should pay attention to by keeping the audience awake and moves on in its own pace freely while consciously sticking to some of the conventions of the genre and ultimately ends with reminding the audience of the benefits of the presentation and leaving them with a positive note about the future.

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