

Spanish to English Scientific Translation on Climate Change and Political Cartoons

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MASTERS IN PROFESSIONAL TRANSLATION

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A handwritten signature in black ink, appearing to read 'Desirée Borneo', written in a cursive style.

II. Table of contents

I. Plagiarism disclaimer	2
II. Table of contents.....	3
III. Introduction	4
IV. Original text.....	6
V. Translation	27
VI. Revision.....	38
VII. Budget	46
VIII. Invoice	47
IX. Translation commentary	48
1. The Translation Process	48
1.1. Why and how	48
1.2. Steps	49
2. Difficulties translating the article	51
2. 1. Descriptions of descriptions	52
2.2. The passive voice.....	55
2.3. Excessive parenthetical information.....	57
2. 4. Citations in long paragraphs	59
2.5. Content mistakes and accuracy.....	60
2.6. Idiomaticity and grammatical transposition	62
2.7. Peer reviews.....	64
2.8. Keeping the reader interested	65
X. Budget vs. invoice	68
XI. Conclusion.....	70

III. Introduction

My Final Master's Degree Project (FMDP) consists of both a translation and a revision. I applied for a translation agency specialized in Spanish to English academic and scientific articles. Once my candidacy was accepted, they explained that the work would be done in pairs. I had to translate half the article and send it in for revision to my FMDP partner. Conversely, I had to revise the other half translated by my FMDP partner. We communicated during the whole process in order to keep the final product consistent. Additionally, I took the role of Project Manager (PM). I managed the communications with the client, put together both of our translations and made the final revision.

The article we translated studies the way cartoonists portray political controversies in the United States regarding climate change. The authors divided their sample in two: cartoons that deny the existence of climate change (denialists) and cartoons that support its existence, or do not deny it (non-denialists). Throughout the article, they heavily describe how cartoonist portray politicians, public figures and policies linked to this issue. Furthermore, they analyse the cartoonists' discursive strategies, paying special attention to the use of scientific or non-scientific arguments. This text did not employ much terminology, which saved us a lot of time and allowed us to work on the linguistic issues. Therefore, the focus of the translation was set on phraseology.

My FMDP partner did the first half of the article, which included the abstract, introduction, methodology and the beginning of the results. I translated the rest of the results, the discussion, and conclusions. Each half entailed different challenges. My partner had to edit the abstract, rather than translate it, because the authors had already translated it themselves. A task that proved to be more difficult than expected. My half of the text contained a long table with bulleted lists, requiring the use of parallel structures; and the section with the most descriptions of images, requiring precision and fact checking.

I voluntarily chose to be the PM. We relied a lot on teamwork, so being the PM was not a heavy burden. Still, it was time consuming. The biggest workload was to do the final revision. Even after a couple of internal and external revisions, there were still small

linguistic mistakes and room for improvement. What is more, we had missed important formatting aspects.

In the next chapters I describe my professional experience with managing the budget, invoice and client. The interaction with the client was brief and mostly revolved around setting expectations and timelines. I also describe the translation and revision process I followed, the tools I used and the main problems I encountered. I decided on two different approaches to the translation process, and compare them in the following chapters. As for the revision, I followed Mossop's parameters and kept in mind all the formatting requests to make an article ready for publication. In the end of the dossier I discuss my conclusions on being a translator versus being a reviser.

I dedicated the majority of this dossier to analysing the linguistic problems I found throughout my translation and revision. This was a big learning opportunity because I do not have a language-related degree. I took the time and effort to note down most of the choices I made and reflected on them. I then picked the main issues and discuss them in the translation commentary. Many of the notes that did not make it here had more to do with me learning about translation and languages, than problems with the article itself. Nevertheless, before enrolling in this master I would not have notice all those element that improve readability so much.

IV. Original text

Climate change and political cartoons

Abstract

In this chapter the way in which political controversies in relation to the issue of Climate Change in the United States have been depicted by cartoonists is analysed. Cartoons as an opinion genre are extremely suitable and useful for this particular purpose because they represent a combination of image and text and create very efficient multimodal communicative content. Through the analysis of a corpus of a total of 758 such cartoons divided into the two categories of denialist and non-denialist, the different discursive strategies utilised by US politicians, which have had significant repercussion in the global public sphere, are observed. In addition to this, the main rhetoric fallacies and tools used by American politicians to dominate their political opponents, most of which are in fact completely wrong in scientific terms, are similarly observed. It comes as a surprise, in both denialist and non-denialist cartoons, that the use of non-scientific arguments for the acceptance or rejection of the existence of severe climate imbalance dominates. Also visible is the distressing possibility that Climate Change may be non-reversible, as is and the necessity to implement environmental policies aimed at the reduction of greenhouse gas emissions. By way of conclusion, a list of recommendations is presented for cartoonists and the public as a means for avoiding political confrontation and the polarization of positions with regard to climate change.

Keywords: American politicians, cartoons, climate change, deniers, scientific evidence.

Introducción

La postura de los políticos de Estados Unidos de América (USA) respecto al cambio climático (CC) nunca ha sido neutral (Jacques et al., 2008; Hamilton, 2011; McCright and Dunlap, 2011). A pesar de albergar en su territorio algunos de los mejores equipos de científicos y a algunas de las más prestigiosas revistas dedicadas al estudio del CC, the acceptance of CC has always been controversial and a source of confrontation in the

public arena (Boykoff, 2007; Brewer, 2011). De hecho, la llegada de Donald Trump a la presidencia de Estados Unidos, durante el año 2017, significó un cambio rotundo en la política medioambiental de su país y agudizó de manera drástica la confrontación entre republicanos y demócratas (De Pryck and Gemene, 2017; Seo, 2018). Durante la legislatura anterior, bajo la presidencia de Barack Obama, se había avanzado en la política medioambiental, en especial en medidas proactivas para combatir el CC (Bomberg and Super, 2009). Muchas de estas como consecuencia de la campaña del demócrata Al Gore, que en 2006 presentó la película *An inconvenient truth*, un éxito de taquilla donde denunciaba la grave crisis climática (su compromiso con el CC le reportó ser distinguido con el premio Nobel de la Paz, el año 2007) (Gozzer and Domínguez, 2011; Jacobsen, 2011; Nolan, 2017). De este modo, el CC ha figurado estos últimos años en la agenda política de los demócratas norteamericanos (Unsworth and Fielding, 2014), convirtiéndose en un tema de amplia discrepancia con respecto al partido republicano, casi al mismo nivel que otros asuntos profundamente polémicos, como la gestión de la sanidad o las medidas antiterroristas (Dunlap and McCright, 2010; Elsasser and Dunlap, 2013).

Esta discrepancia ha llevado a las élites del GOP (Grand Old Party, como se conoce a la formación republicana) a negar el CC, y a justificar las alteraciones climáticas escudándose en los motivos más dispares (Davenport and Lipton, 2017). Con la llegada al poder de Trump, uno de los momentos más decisivos y quizá significativos de este cambio de rumbo del gobierno norteamericano fue la retirada del país del Acuerdo de París, en 2017 (Zhang et al., 2017; Gervasi, 2019), hecho trascendental para el propio país, pero también para el resto del mundo. De este modo, uno de los actores fundamentales en la lucha contra el CC (además de ser uno de los países con un mayor potencial científico para su estudio y seguimiento), se retiraba de ese órgano de control y decisión, y daba un fuerte golpe de autoridad al *status quo* mundial (Goldstein and Greenberg, 2018).

Estas decisiones políticas, tomadas por uno de los mandatarios más singulares y conflictivos de la reciente historia de EEUU, originaron en los medios nacionales e internacionales una enorme controversia (Betsill, 2017). El carácter abiertamente negacionista de Trump contrastaba fuertemente con el de su predecesor Obama, e incluso con el de George Bush, más discreto en esta cuestión, aunque claramente alineado con las posiciones negacionistas (Lynch et al., 2010; Westmoreland, 2010;

MacNeil and Patterson, 2020). La fuerte e imprevisible personalidad del nuevo presidente unida al uso compulsivo que hace de las redes sociales (en concreto de *twitter*), lo convierten en un emisor directo de contenidos noticiosos, que tienen a su vez una repercusión casi inmediata y viral en la aldea global comunicativa (Ott, 2016; Allen and McAleer, 2018). Asimismo, esta actitud combativa y sin complejos ha favorecido la polarización en la sociedad norteamericana (McCright, et al., 2014; Dunlap et al., 2016), a su vez fuertemente reflejada en los *mass media* (Carmichael et al., 2017).

En este trabajo se estudian las viñetas aparecidas en los *mass media* durante los últimos diecinueve años concernientes al CC y su relación con la actualidad política norteamericana. El uso del humor gráfico resulta de gran utilidad para abordar la actualidad noticiosa, y para proyectar sobre la opinión pública los aspectos más atractivos y destacados de la misma (Domínguez, 2014; Domínguez, 2015 a and b). Diversos estudios muestran cómo desde las viñetas se capta mejor la opinión pública respecto a temas particularmente conflictivos, y cómo estas consiguen manifestar mejor ese pulso que otros géneros periodísticos opinativos (Forceville and Urios-Aparisi, 2009; Domínguez and Mateu, 2014; Domínguez et al., 2014). En estas viñetas relativas al CC se entremezclan diversos asuntos de la actualidad, en un constante equilibrio entre su contenido puramente político y su parte científica, sea esta de tipo conservacionista generalista o bien aluda más concretamente a algún hecho aislado, como por ejemplo al último informe del IPCC (Intergovernmental Panel on Climate Change).

En este sentido, resulta interesante abordar cómo desde el periodismo gráfico se reflejan estas cuestiones, y hasta qué punto entre las líneas argumentativas usadas por los viñetistas figuran evidencias científicas que refuercen sus explicaciones. Así pues, este artículo busca determinar si las viñetas sobre el CC muestran argumentos científicos que las sustenten, o si, por el contrario, se dedican exclusivamente a atacar, cuando no a ridiculizar, a sus adversarios políticos. En este último caso, nos interesa determinar qué tipo de razonamientos siguen estos viñetistas y cuáles son las explicaciones que ofrecen a sus lectores sobre las causas del calentamiento global (Domínguez et al., 2017).

Asimismo, nos interesa discriminar qué estrategias de argumentación y qué recursos retóricos usan los viñetistas para divulgar sus ideas sobre el CC, y si se inclinan más por la persuasión que por el convencimiento, o si caen en ocasiones directamente en la manipulación informativa.

Metodología

Para desarrollar el estudio se han utilizado las principales herramientas de búsqueda en línea de acceso libre. Las bases de datos de imágenes utilizadas han sido Google imágenes, Caglecartoons, Cartoonstock, Cartoonistgroup, Cartoonmovement, Toonpool y Politicancartoons. También se ha realizado una búsqueda en páginas de actualidad política ilustrada como gocomics.com, Townhall.com, Lambiek comiclopedia, Green Humor y usnews.com. Las palabras clave utilizadas han sido “climate change” y “global warming”. En el caso de las búsquedas en la herramienta Google imágenes hemos acompañado cada palabra clave con la palabra “cartoon”. El periodo de búsqueda incluyó desde junio de 2001 hasta marzo de 2020.

Para el estudio se han seleccionado únicamente las viñetas relacionadas con la crisis climática que presentaban un contenido estrictamente político o ideológico en el marco contextual de USA. Esto es, la representación de líderes políticos, de corrientes ideológicas, de políticas específicas, de organizaciones y de organismos públicos o privados relacionados con el clima o la preservación del medio ambiente. En este análisis se ha prestado también una particular atención a la caracterización de los políticos, metaforizada o no, así como a otros aspectos satíricos y burlescos. De este modo se ha analizado la imagen en su contexto multimodal, estudiando el texto que las acompaña y determinando las principales estrategias argumentativas utilizadas, así como las principales falacias argumentativas (como ataque *ad hominem*) (Forceville and Renckens, 2013).

Para el estudio global de las viñetas se las dividió en dos grandes grupos: negacionistas y no negacionistas. Se consideró que una viñeta era negacionista cuando ridiculizaba los postulados que defienden la existencia del CC y se criticaban medidas de corte ecológico, como reducir emisiones de carbono o proteger el medio ambiente. También se consideró negacionistas aquellas que atacaban a los políticos que abogaban por medidas restrictivas, como un descenso del consumo de combustibles fósiles, enmarcadas dentro del Green New Deal. Y se consideró no negacionista si los argumentos que aparecían en la misma no negaban o defendían la existencia del CC. Finalmente, se estudió de cada viñeta si la argumentación desarrollada en la misma contenía evidencias científicas o no. Entendiendo por evidencias científicas si abordaban cualquiera de los seven state-of-the-climate indicators described by the

Global Climate Observing System (GCOS, 2019), i.e., relacionadas con la alteración de temperature and energy (including surface temperature and ocean heat), de la atmospheric composition (incremento de la concentración del atmospheric CO₂ concentration), del ocean and water (aumento de la ocean acidification and sea level), and de la cryosphere (deshielo de los glaciers and disminución de Arctic and Antarctic sea ice extent), considerando también un aumento de la frecuencia de incendios forestales, y de los fenómenos meteorológicos extremos así como la extinción de especies.

Con anterioridad a la codificación de las viñetas en los dos grupos, se desarrolló un independent intercoder reliability test con dos coders independientes, para establecer la validez de los grupos siguiendo el modelo de Fleiss (1971). Reliability was established using 76 cartoons, approximately 10% of the total sample. The Fleiss' kappa coefficient for the two main groups ($k = 0.932$) indicated an almost perfect agreement according to standards (Wimmer and Dominick, 1996). Once the reliability of the codification was confirmed, the whole sample was coded. La presencia o ausencia de argumentación científica dentro de las viñetas negacionistas y no negacionistas se analizó mediante una prueba binomial. Todos los análisis estadísticos se realizaron mediante el programa IBM® SPSS® Statistics Versión 26.

Resultados

Del muestro realizado por los buscadores antes citados se obtuvo un total de 758 viñetas, 568 no negacionistas y 190 negacionistas. La mayoría de ellas provienen de viñetistas americanos (579), concretamente de USA (540), pero también hay provenientes de Europa (138), África (2), Asia (23) y Oceanía (16). La aparición de las viñetas se reparte a lo largo del periodo estudiado, pero con claros repuntes ligados a la actualidad informativa, tanto dentro como fuera de las fronteras norteamericanas, en momentos relacionados con sucesos concretos, como la Cumbre de París o algunos de los informes del IPCC.

Si analizamos los discursos utilizados se observa que la proporción de viñetas no negacionistas que recurre a argumentos científicos es significativamente menor (44%) que las que utiliza argumentos científicos (56%) ($P\text{-valor} < 0.0001$). Y una situación similar se observa con la proporción de viñetas negacionistas que recurre a argumentos

científicos (23%) siendo significativamente menor que las que utilizan argumentos no científicos (77%) (P-valor = 0.006) (Figura 1).

INTRODUCIR AQUÍ LA FIGURA 1

Believers vs. deniers: viñetas no negacionistas

Los viñetistas no negacionistas muestran el deterioro del mundo, la fusión de los polos, la pérdida de biodiversidad, las inundaciones, la sequía, los huracanes, las emisiones de CO₂, los incendios forestales y muchos otros fenómenos relacionados con el CC. Como era previsible, Trump y el Congreso de los Estados Unidos constituyen dos de los *leit motifs* más utilizados, pero también aparecen caricaturizados el expresidente George Bush, y otros muchos políticos conservadores como Mitch McConnell, Gavin Christopher Newsom, John McCain, Scott Print, Jim Mattins, Rick Santorum, Marco Rubio, Willard Mitt Romney, Mitch McConnell, Karl Rove o Stephen Lee Johnson. Asimismo, políticos de otros países, como Andrew Scheer y Angela Merkel, líderes conservadores de Canadá y Alemania, respectivamente, aparecen en algunas viñetas. También el magnate Rupert Murdoch, dueño de un amplio grupo de la comunicación, aparece caricaturizado.

Pero sin duda, Trump protagoniza gran parte de las viñetas no negacionistas estudiadas (51,8 %). Es presentado como un hombre arrogante, con su extravagante flequillo y su larga corbata roja (su corbata da la vuelta al mundo (Marian Kamensky, Austria), con el rostro colorado, de cuerpo rechoncho. Aparece en numerosas viñetas destruyendo el legado ambiental de su predecesor Obama (Adam Zyglis, EEUU; Rob Rogers, EEUU) y el US EPA (United States Environmental Protection Agency) (Lisa Benson, EEUU). En muchas otras aparece jugando con el globo terráqueo en sus manos (Sorit Gupto, India), o como un balón que considera suyo (Toby Morris, Nueva Zelanda), o al que da puntapiés (Bill Bramhall, EEUU), o incluso se lo come (Riccardo Marinucci, Italia; Arcadio Esquivel, Costa Rica). Trump aparece caricaturizado, desarrollando actos absurdos, que dejan en evidencia la falsedad de sus argumentos, como jugando al golf con el agua hasta la cintura (Marian Kamensky, Austria) (Figura 2A), o en medio de un incendio forestal (Dave Whamond, Canadá), obsesionado con las mujeres guapas (Nick

Anderson, EEUU) (la única manera de que se fije en el CC). A Trump se le insulta directamente “stupid idiot” (Pedripol, España), se le dibuja como un payaso (Marian Kamensky, Austria) o tirándose pedos (Michael Kountouris, Grecia).

En cuanto a George Bush, su predecesor republicano, es caracterizado con las orejas separadas, frente estrecha, nariz angulosa y abierta, dientes prominentes, bajo de estatura y de aspecto algo simiesco, a veces demoniaco. No obstante, las viñetas se muestran mucho menos agresivas que con Trump: Mike Peters lo dibuja ahogándose mientras dice “There... is... not... global... blurbing” (Mike Peters, EEUU) o representando a la Estatua de la Libertad levantando el dedo corazón, con unos documentos titulados Climate Change (Petar Pismestrovic, Serbia).

Respecto a los políticos demócratas tratados por los viñetistas no negacionistas estos son representados de manera mucho más amable y cercana. Al Gore es presentado como Superman (Christo Komarnitski, Bulgaria), o como el gran abanderado de la protección del planeta (Arcadio Esquivel, Costa Rica). El viñetista suizo Patrick Chappatte presenta a Al Gore diciendo: “A Nobel Peace Prize against Global Warming” y a Bush replicándole: “There is not scientific consensus of the existence of peace”. Obama figura arrastrando un pesado equipaje (Petar Pismestrovic, Serbia), o vestido de doctor tomando el pulso al mundo (Pat Bagley, EEUU), o haciendo extrañas fórmulas para combinar economía con medio ambiente (Adam Zyglis, EEUU). Se celebran sus pequeños gestos (Mike Keefe, EEUU), aunque signifiquen bien poco. No obstante, también se le critica su ambigüedad en algunos casos (Manny Francisco, Filipinas) y su política de acercamiento a China (Petar Pismestrovic, Serbia), compartiendo tablero de contaminación con el presidente chino Hu Jintau (Riber Hansson, Suecia, “Obama and Hu Jintau playing climate chess”), hasta el punto de que un viñetista le hace exclamar: “I’m becoming a climate change denier” (Joe Heller, EEUU). El reto que tiene por delante es enorme, junto a muchos otros problemas inminentes e igual de complejos (Joep Bertrams, Países Bajos). En algunos casos, el viñetista equipara las políticas de demócratas y republicanos y les acusa de explotar de igual modo los recursos de la tierra (Adam Zyglis, EEUU).

El conjunto de políticos republicanos es representado como elefantes, mientras que los demócratas como burros, atendiendo a los símbolos de su partido. Esto da lugar a viñetas conceptualmente sorprendentes, como elefantes en un iceberg derritiéndose, del todo ajenos a la situación (Taylor Jones, EEUU), o un oso polar mirando con rencor o

charlando con un elefante (Pat Bagley, EEUU; John Trever, EEUU; Mike Peters, EEUU) (Figura 2B). Algunos científicos republicanos, como el senador McConnell, celebran el frío del invierno como un ejemplo que evidencia la falsedad del CC (Joel Pett, EEUU; Jeff Danziger, EEUU).

El gran nivel de consenso científico sobre el CC aparece en algunas viñetas, donde se muestran a los republicanos, muchas veces como elefantes, de espaldas a la comunidad científica, o bien dando validez a actores poco fiables (“Scientific consensus? Ha! Doctors Mutubu and Wititi here both don’t believe in climate change” (Daryl Cagle, EEUU), o tan sólo tomando los informes minoritarios que les son favorables (Pat Bagley, EEUU), o ridiculizando los informes técnicos (Mike Luckovich, EEUU), negando directamente la evidencia y justificándose, diciendo “I’m not a scientist” (Milt Priggee, EEUU). Entre los argumentos esgrimidos por los republicanos para desmontar el CC es que este es consecuencia de “un ciclo climático natural” (Pat Bagley, EEUU). Frente a la ciencia verdadera, Trump aparece representado como “Alternative science” (Rob Rogers, EEUU).

Greta Thunberg también aparece en numerosas viñetas, en general en oposición a Trump. Por ejemplo, los viñetistas juegan con las coletas de Greta contra el pelo enfurecido de Trump (Sandeep Adhwaryu, India), o incluso dibujan a Trump con las coletas de la niña activista (Ruben L. Oppenheimer, Países Bajos). En varias viñetas se muestra a Greta como la única persona de fiar, incluso como la única adulta (Marian Kamensky, Austria; Bruce MacKinnon, Canadá). La encíclica del papa Francisco a favor del CC tuvo muy mala acogida entre los republicanos (Pat Bagley, EEUU; John Darkow, EEUU), que se vieron desautorizados por alguien a quien respetaban y que, *a priori*, consideraban uno de los suyos. Las presiones al Vaticano por parte de los políticos republicanos aparecen en varias viñetas de humoristas no negacionistas. “Tu atiende a tu rebaño que yo atiendo al mío”, le dice al papa un empresario con un rebaño de elefantes, según el estadounidense Jimmy Margulies. El papa aparece como un sacrílego por defender el CC (Nick Anderson, EEUU), o tapando la chimenea con su tiara papal (Nick Anderson, EEUU). El político Rick Santorum increpa al papa y le dice que él sabe mucho más del CC (Jeff Danziger, EEUU), y James Inhofe le lanza una bola de nieve (Bruce Plante, EEUU). El papa se enfrenta a algunos políticos republicanos como los hermanos Koch, y les exhibe el crucifijo como si fueran el anticristo (Jeff

Danziger, EEUU) y otros directamente lo crucifican (Milt Priggee, EEUU). Marian Kamensky dibuja al papa dando la mano a Greta Thunberg, antes de ahogarse ambos, una aferrándose a un trozo de hielo y el otro a una cruz. El mandatario de Roma es presentado en todas estas viñetas desde el respeto y la admiración, como un salvador del mundo (Bill Day, EEUU), casi como un héroe: John Darkow lo dibuja diciendo: “For all the climate change deniers out there! Only Jesus can walk on water!”. Tan solo en una viñeta se recuerda los abusos pedófilos de la iglesia y se sugiere que la encíclica quizá busca ocultarlos (John Cole, EEUU).

INTRODUCIR AQUÍ LA FIGURA 2

Deniers vs. believers: Viñetas negacionistas

Los negacionistas cargan tintas contra los políticos demócratas, especialmente contra los expresidentes Obama y Al Gore. Otros políticos progresistas que aparecen en las viñetas son Hillary Clinton, Bernie Sanders, Nancy Patricia Pelosi, Mitt Romney, Alexandra Ocasio-Cortez y Jerry Brown.

Barack Obama aparece como un político irresponsable, que se concentra en un problema menor como es el CC, desatendiendo al problema verdadero que es el terrorismo islámico. Muchos viñetistas de línea conservadora utilizan el mismo argumento hasta en quince ocasiones (Gary McCoy, EEUU; Randy Bish, EEUU; Steve Kelley, EEUU; Bob Gorrell, EEUU; Branco, EEUU) (Figura 3A). Se refleja a un Obama obsesionado con el medio ambiente, traduciendo todo a emisiones de carbono (Gary McCoy, EEUU), sobornando a los científicos para que avalen sus teorías (Branco, EEUU), o incluso dejándose sobornar por las empresas verdes (Glenn MacCoy, EEUU), en algunos casos presentándolo como insensible a las brutales acciones de tortura de los rehenes del ISIS (Rick McKee, EEUU). Se le ridiculiza por su afirmación de “Climate Change causes terrorism” (Chip Bok, EEUU) y por el protagonismo que busca con esa defensa del clima (Chip Bok, EEUU). Esta crítica se traduce a todo el partido demócrata: el viñetista Rick McKee dibuja a un feroz terrorista

a punto de accionar un cinturón explosivo y a un burro (símbolo demócrata) exclamando: “It’s climate change!!!”.

Al Gore también recibe críticas mordaces, presentándolo como un oportunista, y persona de poco fiar, como un agorero (Gary McCoy, EEUU), y se le tilda de “Hysterical Global Warmer” (Eric Allie, EEUU) o de propagar alarmismo con frases como “The sky is falling” (Rick McKee, EEUU). Muestran su incongruencia de pedir medidas contra el CC y su alto nivel de vida (Lisa Benson, EEUU), sus negocios dudosos (Henry Payne, EEUU; Chip Bok, EEUU; Branco, EEUU), y ridiculizan su libro “An inconvenient truth”, que califican de “Al Gore’s fantasía” (Lisa Benson, EEUU). Incluso se lo compara con Joker (Gary Varvel, EEUU).

Entre los políticos demócratas opositores a Trump, destaca el ataque masivo a Alexandria Ocasio-Cortez, la líder del Green New Deal, a la que se le imputa en reiteradas ocasiones simpatías marxistas (Michael Ramirez, EEUU; Tom Stiglich, EEUU), incluso la visten de guerrillera (Branco, EEUU), vendiendo armas a Fidel Castro (Yogi Love, EEUU) o de pareja de Karl Marx (Michael Ramirez, EEUU). La muestran obsesionada con las vacas, a las que la activista política señala de ser parte del problema del CC debido a sus flatulencias (Sean Delonas, EEUU; Mike Lester, EEUU; Nemo, Canadá). La pintan con un unicornio, como ejemplo palmario de creer en fantasías: “Who needs airplanes and cow toots when you can have unicors and rainbows”, exclama Ocasio en la viñeta de Nate Beeller (EEUU) (Figura 3B). El unicornio es asociado a los políticos demócratas, especialmente a los seguidores del Green New Deal, para manifestar la absurdidad utópica de su propuesta (Scott Stanis, EEUU; Lisa Benson, EEUU). Se considera incluso que el Green New Deal es un caballo de Troya para introducir el marxismo en EEUU y que por eso peligra la libertad de los norteamericanos (Branco, EEUU). Ocasio es mostrada como una persona agresiva y extravagante, que roba a los ciudadanos con el aumento de impuestos (Lisa Benson, EEUU), que atenta contra la libertad de los norteamericanos (Gary McCoy, EEUU) y que se basa en la impostura (Gary Varvel, EEUU), una alarmista que va propagando que “The end is near” (Michael Ramirez, EEUU; Ben Garrison, EEUU), “The end is coming” (Branco, EEUU) o “The world will end in 12 years” (Andy Marlette, EEUU; Rick McKee, EEUU). El viñetista Michael Ramirez (EEUU) la dibuja como Joker y Sean Delonas (EEUU) propone que el único gas contaminante es el que exhala la congresista por su boca.

Esta asimilación de un político demócrata a las tesis marxistas también es desarrollada por los viñetistas negacionistas para desacreditar a Greta Thunberg. Branco (EEUU) la presenta como fruto de un sistema educativo contaminado por la droga del socialismo y Matt Margolis (EEUU) como una marioneta del socialismo global. Otros viñetistas optan directamente por presentarla antipática e histérica.

Algunos viñetistas muestran la incongruencia del calentamiento global con el hecho de las frías temperaturas alcanzadas en EEUU durante algunos meses de invierno, incluso de que en algunos estados se haya batido un récord histórico (Al Goodwyn, EEUU; Branco, EEUU; Ben Garrison, EEUU). En algún caso, pintan al político demócrata atrapado en el hielo (Glenn Foden, EEUU; Josh, EEUU), o sepultado por la nieve (Glenn MacCoy, EEUU), incluso el capitolio (William Warren, EEUU; Gary Varvel, EEUU). En estas viñetas se increpan a los políticos demócratas, en especial a Al Gore.

Respecto al papa Francisco, los viñetistas conservadores lo respetan. Chip Bok (EEUU) dibuja a una pareja que ha acudido a la visita del papa, y uno pregunta: “Are you a believer?” Y el otro contesta: “Climate or religion?”. Esta situación se da en otras viñetas, donde los seguidores del papa deben decidir si seguir o no la recomendación de su máximo representante espiritual, creándoles un conflicto entre lo que defienden sus líderes políticos y lo que defiende el papa. Quizá el viñetista más virulento es el estadounidense Branco, que dibuja al apóstol de Roma abrazando a Karl Marx.

En cambio, Trump no aparece prácticamente en las viñetas negacionistas. Tan sólo el viñetista Branco (EEUU) lo muestra con la cabeza decapitada de Karl Marx, con las palabras Paris Climate Accord grabadas en la frente del ideólogo comunista. Trump no es protagonista de las viñetas negacionistas.

INTRODUCIR AQUÍ LA FIGURA 3

Principales estrategias discursivas en las viñetas políticas del Cambio Climático

La polarización en las viñetas del CC se observa claramente en el gran número de recursos semánticos destinados a convencer, si no a persuadir, al lector. Las hipérboles más recurrentes van dirigidas a ilustrar las consecuencias ambientales del CC, con la desproporción de las dimensiones de los huracanes, incendios, tempestades u olas del

mar. Abundan los símiles: por ejemplo se compara a diversas figuras políticas con un avestruz (Mike Luckovich, EEUU; Lee Judge, EEUU; Monte Wolverton, EEUU), incluso a la totalidad de la clase política (Marian Kamensky, Austria). De este modo, se denuncia la apatía y desinterés de los políticos a tratar el controvertido y complicado tema del CC.

La polarización también se aprecia en el gran número de antítesis presentes en las viñetas. La constante confrontación entre el Partido Demócrata y el Partido Republicano aparece reflejada en numerosas viñetas, y en especial, se muestra la comparación de la política climática de Obama con la de Trump. Al primero se le asocian las palabras “cool & mild”, mientras que a Trump las de “hot & variable” (Phil Witte, EEUU). También el Green New Deal, promovido por los demócratas, se opone al “Brown Old Deal”, para hacer referencia a las viejas políticas climáticas contaminantes de los republicanos (Matt Wuerker, EEUU). Esta antítesis también se traslada al gran número de viñetas dedicadas a enfrentar a Trump con la activista Greta Thunberg: se los representa en un ring de boxeo (Ian Baker, UK) y recurrentemente se asocia al presidente de Estados Unidos una inmadurez propia de un niño, frente a la sensatez de la joven adolescente (Stephane Peray, Tailandia; John Darkow, EEUU; Mike Peters, EEUU; Bruce MacKinnon, Canadá).

El color verde se utiliza reiteradamente como metonimia de las políticas ambientales. Coches, aviones, autobuses, incluso trenes, a manos de demócratas son pintados de este color. También a menudo los políticos demócratas visten con trajes de este color. Por ese motivo en varias ocasiones se utilizan animales como la rana (Michael Ramírez, EEUU) o se pinta de este color a otros animales, como el gato (Clay Bennett, EEUU) o al mismo caballo de Troya (Branco, EEUU).

Las metáforas forman un conjunto especialmente abundante, en particular las dedicadas a identificar el orbe terrestre con un objeto en manos de desaprensivos e incompetentes. Trump es motivo de numerosas metáforas y en especial su peinado acoge todo tipo de imagen alusiva al CC (ver Tabla 1). A su vez los viñetistas negacionistas desarrollan un potente conjunto metafórico contra el New Green Deal, al que tratan de cuento de hadas o de algo irreal, haciendo en este aspecto un uso recurrente del unicornio (ver Tabla 1).

INTRODUCIR AQUÍ LA TABLA 1

Discusión

Aunque alrededor del 97% de los científicos está de acuerdo sobre las causas y consecuencias del CC, los estudios muestran que menos del 50% de los americanos creen que el CC es causado por la actividad humana, algo que ocasiona una fuerte división entre sus ciudadanos y dificulta encontrar soluciones consensuadas a la crisis climática (Watts et al., 2019).

En este trabajo se muestra ampliamente cómo dicha polarización se traslada al humorismo gráfico. También cómo los viñetistas estudiados recurren con muy poca frecuencia a contenidos científicos para defender los postulados del CC. No obstante, entre los defensores del consenso sobre un CC antropogénico se aprecian más argumentos basados en la evidencia científica que entre los negacionistas, que prácticamente los ignoran por completo, ya que aparecen en poca proporción (Figura 1) y cuando lo hacen es para ridiculizarlos. Por tanto, resulta sorprendente la poca divulgación que se hace de los fundamentos del CC y que el grueso de las viñetas se centre fundamentalmente en la descalificación del adversario político, con argumentos toscos y vulgares, ayudando a la polarización de las posiciones y dificultando un diálogo sosegado y constructivo (Bohr, 2016). Esta polarización se observa muy nítidamente en el caso de la activista Greta Thunberg, que los viñetistas no negacionistas muestran como una niña valiente (Fearless girl) y comprometida con el medio ambiente, mientras que los negacionistas dibujan un personaje histérico, colérico e insoportable, manipulada por el socialismo mundial. Resulta significativo que la única politización explícita de la figura de Thunberg provenga desde las viñetas negacionistas.

Entre las viñetas estudiadas, la persuasión es la estrategia discursiva más utilizada, en su aspecto multimodal, de imagen y texto complementario. En definitiva, el humorista gráfico busca atraer al lector a su terreno, y para ello pone en práctica alusiones de carácter emocional, que se dirigen más a interpelar a los sentimientos del lector que a conducirlo a una reflexión estrictamente racional. En palabras de Casals (2004), ejercer la persuasión es utilizar la expresividad del que comunica con una intención apelativa para aproximar posturas intelectuales de los receptores al objetivo del emisor. Es lo que Umberto Eco denomina un “sottile inganno” (Eco, 1968), en el sentido de que se apela más cuestiones de identidad o de creencias íntimas que a un ejercicio puro de raciocinio.

Incluso la labor de ciertos viñetistas negacionistas podría ser considerada como meramente propagandística, con discursos manipuladores, que aunque retóricamente pueden estar bien resueltos, resultan a pesar de todo en exceso partidistas y demagógicos. Un ejemplo muy significativo en este sentido lo constituyen las viñetas de Michael P. Ramirez y A. F. Branco, muy influyentes ambos, el primero ganador de dos premios Pulitzer y el segundo con gran repercusión en las redes sociales (con 42 mil seguidores en twitter). Ambos muestran una gran beligerancia contra los políticos demócratas, que consideran antipatriotas y comunistas, cuando no relacionados con los terroristas, y acentúan de manera drástica la dicotomía entre ambos partidos: mientras que los republicanos aparecen unidos a valores muy arraigados en la sociedad norteamericana, como la constitución o la bandera, los demócratas son presentados desprovistos de estos símbolos, e incluso reluctantes o contrarios a ellos.

En cualquier caso, entre los viñetistas los ataques *ad hominem* son frecuentes, tanto entre los defensores del CC como entre sus detractores. Trump es presentado como un estúpido descerebrado, grosero e incontinente, con su extravagante flequillo y su larga corbata roja; Bush como un hombrecillo malvado e ignorante; Obama como alguien del todo insensible al terrorismo, un iluminado peligroso; Al Gore como un vividor, obeso y cínico; Ocasio-Cortez como una mujer histérica y chillona, y como una radical comunista, a un paso de la guerrilla cubana. Solo el Papa se salva de la sátira, que consigue el aplauso de los defensores de la existencia del CC y el silencio de los negacionistas, en su mayoría religiosos (Kilburn, 2014).

Uno de los argumentos esgrimidos por los negacionistas es el aumento de episodios de bajas temperaturas, como si esto fuese inconsistente con el calentamiento global. La simplificación de las tesis de los científicos es manifiesta y posiblemente malintencionada (Fisher et al., 2013): los modelos de CC no descartan episodios de frío extremo; más bien al revés, muestran que se producirán situaciones de estrés climático, tanto por temperaturas muy elevadas como extremadamente bajas (Kharin and Zwiers, 2004; IPCC, 2018). Los viñetistas negacionistas interpretan las nevadas intensas que afectaron EEUU durante los últimos años como una prueba de la falsedad del calentamiento global, y muestran a los políticos demócratas alarmados, casi desesperados, porque no se cumplen sus tesis catastrofistas. Se trata de un claro caso de falacia de ambigüedad, al utilizarse un esquema argumentativo incorrecto y buscar crear de manera intencionada un equívoco en los lectores.

Evidentemente, es consustancial al humor gráfico la sátira política, y en este sentido, la caricatura del personaje político en cuestión. No obstante, resulta ilustrativo como un tema básicamente científico como es el CC y sus consecuencias sobre la biodiversidad, mueve tan poca reflexión científica y como el debate se dirige casi exclusivamente hacia la ridiculización burda del adversario político. En este sentido, abundan las metáforas visuales, con una percepción en muchas ocasiones estereotipada de las naciones, políticos y actores sociales, en aras a facilitar una rápida comprensión del mensaje (Charteris-Black, 2019). En ocasiones se observa una evolución metafórica, y como un meme se va adaptando al ecosistema informativo, como es el caso del uso de las coletas de Greta Thunberg, que llegan a convertirse en símbolo de la lucha contra el CC (Domínguez, 2016; 2019).

Por otro lado, también resulta indicativo que la biodiversidad mostrada en ambos grupos de viñetas se ciña básicamente al oso polar, como si esta fuese la única especie afectada por el calentamiento global. Ciertamente, el oso polar, junto con el pingüino, se han establecido como símbolos del CC (Manzo, 2010); sin embargo, el abuso de estos animales distancia a la sociedad de la realidad del CC (Moreno et al., 2020). El país de Thoreau, Emerson, Burroughs, Audubon y de tantos otros naturalistas excepcionales, muestra poca sensibilidad por su patrimonio natural. O al menos así lo reflejan los viñetistas, que enzarzados en la disputa política más descarnada (Dryzek and Lo, 2015). olvidan utilizar otras especies emblemáticas norteamericanas, como el águila pescadora, las secuoyas, la mariposa monarca, las nutrias, las otras dos especies de oso (el negro y el pardo), o tantos otros valores naturales exclusivos de su biodiversidad, provocando un distanciamiento y escepticismo de sus lectores (Zhou, 2016) .

Las políticas mediambientales no pueden estar sujetas a cambios de rumbo en función de una *a priori* recomendable alternancia política (Hahnel et al., 2019), y se deberían llevar a cabo en aras a un progreso sostenible, donde el respeto al medio ambiente pueda coexistir con una economía saludable y con un sistema de investigación científica lo más despolitizado posible (Kousser and Tranter, 2018; Hardy et al., 2019). En cambio, este artículo muestra que la polarización política respecto al CC lleva a los republicanos a considerar “fact news” todo aquello que no cuadra con sus perentorios intereses políticos (Prasad, 2019), ignorando por completo las más contrastadas evidencias científicas.

Estas actitudes negacionistas a menudo tienen también un importante sesgo populista, alentando a la ciudadanía a desentenderse del problema y a seguir llevando el mismo ritmo de vida (en base a una supuesta *volonté générale* or *will of the people*), así como reivindicando un etnonacionalismo excluyente (Wodak, 2019). A menudo las viñetas negacionistas dibujan al líder demócrata (sea Obama, Al Gore u Ocasio-Cortez) rodeados de gente que escuchan con estupefacción las propuestas ambientalistas, en un claro ejemplo de falacia *ad populum*, como si una cuestión científica se tuviese que resolver en base al sentido común o a la opinión de la mayoría.

Conclusiones

Este trabajo estudia el modo en que los viñetistas han tratado el CC en EEUU y los principales argumentos esgrimidos, con su amplio y diverso conjunto de recursos retóricos. Se observa que en ellos hay muy poca evidencia científica, especialmente entre los negacionistas, que basan el grueso de su ataque en desautorizar y ridiculizar al político del momento, sea Al Gore, Obama o Alexandria Ocasio-Cortez. Entre los viñetistas defensores del CC, que son mayoría, las argumentaciones se centran en contestar las diferentes acciones de los políticos republicanos, en especial Trump, y en ridiculizarlos, pero sin entrar en el debate científico. Por todo ello, creemos que los viñetistas deberían utilizar la plataforma comunicativa de que disponen para desarrollar, a parte de una legítima crítica política, otros aspectos necesarios, que podrían ayudar a alcanzar un mayor consenso sobre la situación de emergencia climática que afecta a todo el mundo (Hoffman, 2011) y ayudar a despolitizar el CC, o al menos a reducir la tensión entre ambos partidos (Corry and Jørgensen, 2015; Chin et al., 2020).

Una serie de recomendaciones que resumimos en los siguientes puntos: 1) Evitar la confrontación política y la polarización de las posturas ideológicas: el CC no puede ni debe ser patrimonio de ninguna ideología; 2) Rebajar el tono del ataque hacia el adversario político y evitar caer en la descalificación personal (ataque *ad hominem*); 3) Utilizar el humor gráfico para hacer difusión de la problemática del CC (y en el supuesto de no creer en este, de las razones científicas que avalan dicha postura); y, finalmente, 4) no dudar de la probidad de la comunidad científica, ni intentar deslegitimizar sus estudios científicos, publicados en revistas de contrastada calidad, aludiendo a falsos y oscuros intereses económicos.

Table 1. Principales metáforas analizadas en las viñetas sobre el CC y su relación con la política norteamericana.

Metáforas no negacionistas	
Donald Trump es:	• un casquete de hielo o iceberg (Michael Kountouris, Grecia; David Horsey, EEUU; Luc Descheemaeker, Bélgica) • un huracán (Matt Wuerker, EEUU; Marian Kamensky, Austria) o lo es su pelo (Marian Kamensky, Austria; Popa Dar Es Salaam, Tanzania) • una chimenea (su boca (Amorim, Brasil; David Horsey, EEUU), o los cuernos que le salen de la cabeza (Arcadio Esquivel, Costa Rica)) • el canario de la mina (Rick McKee, EEUU) que detecta greenhouse gases
Al Gore es:	• el sol que irradia mucho calor (Ann Telnaes, Suecia).
La Tierra es:	• una pelota de golf (Jimmy Margulies, EEUU; Steve Greenberg, EEUU; Shreyas Navare, India) • una bomba (Adam Zyglis, EEUU) • un huevo frito (Ann Telnaes, Suecia) • una bola demoledora (Marian Kamensky, Austria) • un helado que se derrite (Arcadio Esquivel, Costa Rica)
La chimenea es:	• la trompa del elefante republicano (Nick Anderson, EEUU; Angel Boligan, Cuba) • un puro que se fuma George Bush (Christo Komarnitski, Bulgaria) • cuernos humeantes que salen de la cabeza de Bush (Monte Wolverton, EEUU)
El cambio climático es:	• un tsunami que va a arrasar la costa (Sean Leahy, Australia) • un meteorito (Mike Luckovich, EEUU) • un cocodrilo (Bill Day, EEUU)
Metáforas negacionistas	
Al Gore es:	• un termómetro bajo cero (Ben Garrison, EEUU)
Obama es:	• una veleta (Lisa Benson, EEUU) • Climate Miss Universe (Chip Bok, EEUU) • lleva unas placas de sol a modo de viseras que no le dejan ver la realidad (Michael Ramirez, EEUU)
Donald Trump es:	• una veleta que marca America First contra Climate Change (Lisa Benson, EEUU)
Alexandria Ocasio-Cortez es:	• una rana (Bob Gorrell, EEUU) • un muñeco de nieve (Lisa Benson, EEUU) • el joker de una baraja de cartas (Michael Ramírez, EEUU) • un brebaje alcohólico de color verde (<u>Bart van Leeuwen</u>, Países Bajos)
El Green New Deal es:	• un unicornio de juguete (Scott Stantis, EEUU) • el dodo (Ken Catalino, EEUU) • el caballo de Troya (Branco, EEUU) • un vagón de tren que lleva a América al infierno (Branco, EEUU) • un coche verde sin ruedas (Gary Varvel, EEUU) • un coche sin gasolina (Ken Catalino, EEUU) • un autobús anticuado (Lisa Benson, EEUU) • una caja de bombones vacía (Lisa Benson, EEUU) • un molino roto de un parque eólico (Gary Varvel, EEUU) • un vómito de Alexandria Ocasio-Cortez (Gary McCoy, EEUU)
Global warming es:	• una férula papal (Branco, EEUU) • un palo de hierro al que queda pegada la lengua de Al Gore debido al frío (Michael Ramírez, EEUU)

Socialismo es:	• la chaqueta de un hombre que dirige una marioneta (Matt Margolis, EEUU) • un coche roto (Gary Varvel, EEUU) • una botella de veneno (Branco, EEUU) • una flatulencia (Bob Englehart, EEUU)
Acuerdo de París es:	• un paraguas (Michael Ramírez, EEUU)
EPA es:	• unos grilletes (Glenn Foden, EEUU) • el canario de la mina que no detecta los GEH (Glenn Foden, EEUU)
El agua del mar es:	• la sangre de víctimas del terrorismo (Branco, EEUU) • lágrimas de demócratas (Gary Varvel, EEUU)

FIGURES

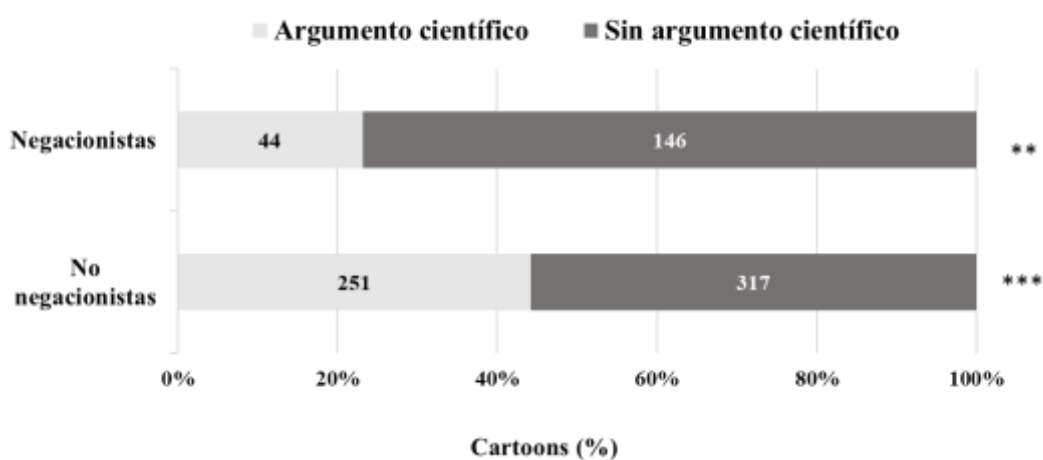


Figura 1. Viñetas categorizadas en función del enfoque del autor (deniers/believers) y de la presencia o ausencia de argumentaciones científicas sobre el cambio climático. El número de viñetas analizadas en cada caso aparece dentro de las barras. Significant differences are based on a binomial test. Two Asterisk (**) represent $P < 0.01$ and three asterisks (***) represent $P < 0.001$.

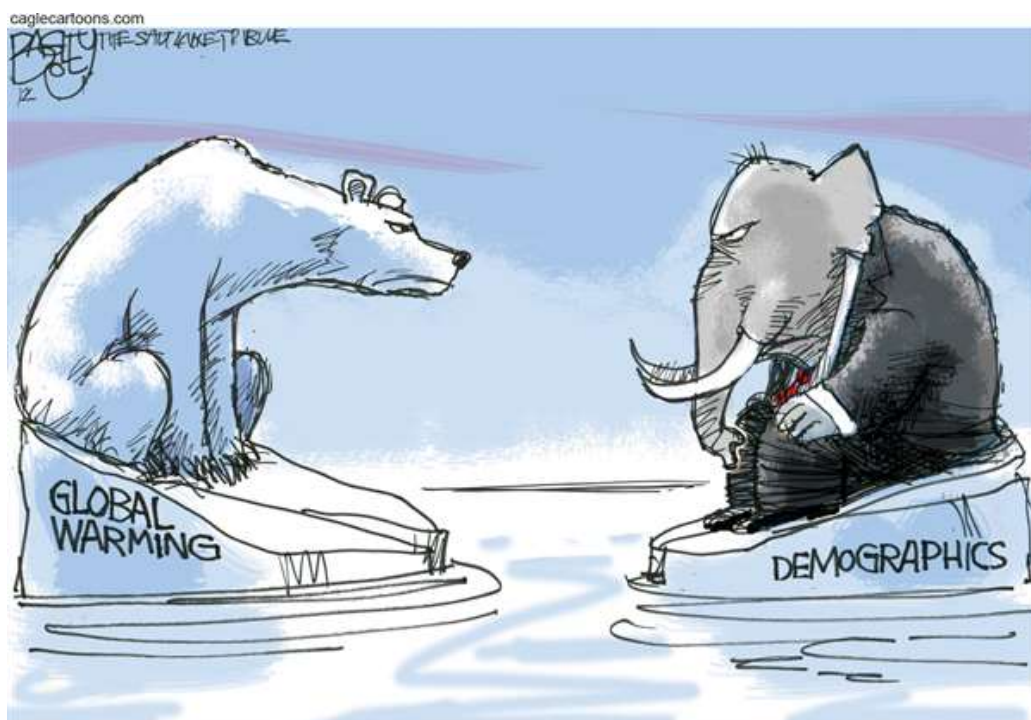


Figura 2. Viñetas no negacionistas. A) “America first”, Marian Kamensky, Austria, 2017. B) "Republicans on ice", Pat Bagley, EEUU, 2012.

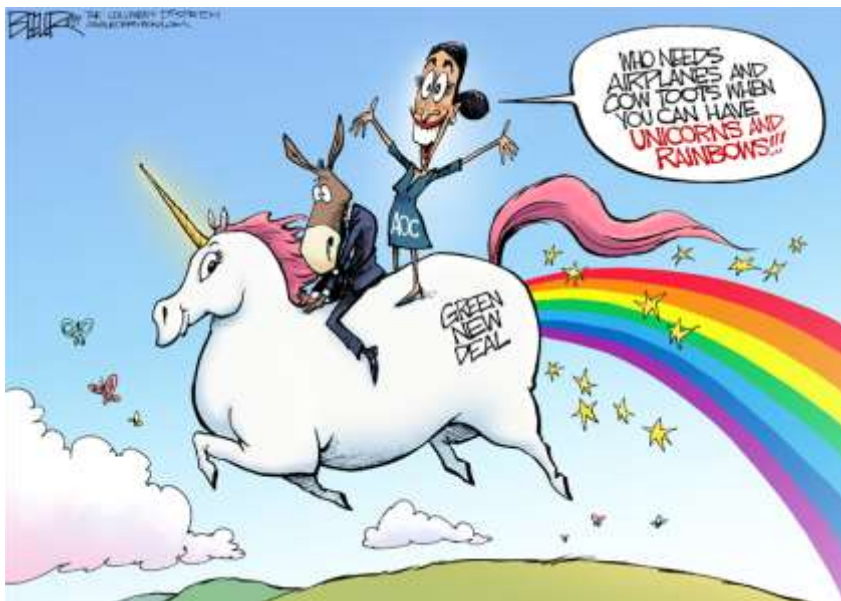


Figura 3. Viñetas negacionistas. A) "Obama takes on Isis", Randy Bish, EEUU, 2015.
B) "Green New Deal", Nate Beeler, EEUU, 2019.

V. Translation

Alexandria Ocasio-Cortez is one of the most targeted democratic and anti-Trump politicians. The Green New Deal leader is repeatedly accused of sympathising with Marxism (Michael Ramirez, USA; Tom Stiglich, USA). Some even portray her as a guerrilla fighter (Branco, USA), or as Karl Marx's girlfriend (Michael Ramirez, USA), and show her selling arms to Fidel Castro (Yogi Love, USA).

They also show her fixated on cows (Sean Delonas, USA; Mike Lester, USA; Nemo, Canada). In these cartoons, Ocasio-Cortez's caricature claims that cows are among the causes of CC due to their flatulence. However, Sean Delonas (USA) suggests that the only polluting gas is the one exhaled from her mouth.

In a Nate Beeler's cartoon (USA), Ocasio-Cortez is painted together with a unicorn. Ocasio-Cortez's caricature exclaims: "Who needs airplanes and cow toots when you can have unicorns and rainbows!!!" (Figure 3). In this case, the unicorn is used as a telling example of how she believes in fantasies. Moreover, the unicorn is linked to democratic politicians, especially the Green New Deal supporters (Scott Stanis, USA; Lisa Benson, USA). It is a way to illustrate that their proposal is absurd and unrealistic. For some, the Green New Deal is a Trojan horse that introduces Marxism in the USA (Branco, USA). And therefore, it can compromise the freedom of the American people.

Other cartoonists illustrate Ocasio-Cortez as:

1. a person who is aggressive and flamboyant, and who steals from citizens by raising taxes (Lisa Benson, USA),
2. a threat to American freedom (Gary McCoy, USA),
3. a fraud (Gary Varvel, USA),
4. a scaremonger who spreads phrases such as: "The end is near" (Michael Ramirez, USA; Ben Garrison, USA), "The end is coming" (Branco, USA) or "The world will end in 12 years" (Andy Marlette, USA; Rick McKee, USA), and

5. a joker (Michael Ramirez, USA).

Denialists also portray Greta Thunberg as a Marxist in order to discredit her. Branco (USA) presents Thunberg as the product of an education system contaminated by the drug of socialism. Matt Margolis (USA) shows her as a puppet of the world's socialist forces. Other cartoonists choose to portray her as unpleasant and hysterical.

Some cartoonists argue how incongruent global warming seems, given how cold some winter months were in the USA. They also touch on the fact that some states reached the lowest temperatures ever recorded (Al Goodwyn, USA; Branco, USA; Ben Garrison, USA).

In some cases, cartoonists depict democratic politicians to be frozen solid (Glenn Foden, USA; Josh, USA) or buried in snow (Glenn MacCoy, USA), even the capitol is depicted as such (William Warren, USA; Gary Varvel, USA). Democratic politicians, especially Al Gore, are rebuked in these cartoons.

Pope Francis is mostly respected by conservative cartoonists. In one of Chip Bok's cartoons (USA), we can see a crowd who has attended the Pope's visit. A woman and a man have a conversation. She asks: "Are you a believer?" and he answers: "Climate or religion?" This dilemma is shown in other cartoons as well – the Pope's followers must decide whether or not to follow the advice of their highest spiritual representative, thus being torn between what their political leaders defend and what the Pope defends. Perhaps the most virulent cartoonist is Branco (USA), who draws the Pope hugging Karl Marx.

Trump, however, hardly ever features in the denialist cartoons. Only Branco (USA) has painted him: Trump is shown holding the decapitated head of Karl Marx, which has the words "Paris Climate Accord" engraved on his forehead. All in all, Trump is not the subject of denialist cartoons.

Figure 3

Two Denialist Cartoons



Note. From left to right: *Obama takes on Isis* by Randy Bish (USA, 2015) and *Green New Deal* by Nate Beeler (USA, 2019).

Main Discursive Strategies in Political Cartoons on CC

There is a clear polarisation in the CC cartoons. Polarisation can be easily observed in the large number of semantic resources aimed at convincing, or at least trying to persuade, the reader. First, the most recurrent hyperboles illustrate the environmental consequences of CC. They show hurricanes, fires, storms or sea waves on a disproportionate scale. Second, these cartoons have an abundance of similes. For example, cartoonists compare various political figures to ostriches (Mike Luckovich, USA; Lee Judge, USA; Monte Wolverton, USA). Marian Kamensky (Austria) even compares the entire political class to them. By doing so, the cartoonists denounce the apathy and disinterest of politicians in dealing with the controversial and complicated issue of CC.

The large number of antitheses in these cartoons also reflects polarisation. Numerous cartoons show a constant clash between the Democratic and the Republican Parties. In particular, they often illustrate Obama's climate policy against Trump's. Obama is associated with the words *cool* and *mild*, while Trump is associated with *hot* and *variable* (Phil Witte, USA). The Green New Deal, promoted by the Democrats, is also set against the "Brown Old Deal", which is a reference to the old polluting climate policies of the Republicans (Matt Wuerker, USA).

This antithesis also occurs in many cartoons devoted to pitting Trump against the activist Greta Thunberg. For example, Ian Baker (UK) depicts the two in a boxing ring. Moreover, some cartoonists frequently associate the USA president with a childlike immaturity and the young teenager with good judgment (Stephane Peray, Thailand; John Darkow, USA; Mike Peters, USA; Bruce MacKinnon, Canada).

Cartoonists repeatedly use the colour green as a metonym for environmental policies. Cars, planes, buses, even trains operated by the Democrats are painted in this colour. Democratic politicians are also often dressed in green suits. In line with this metonym, cartoonists frequently use animals such as frogs (Michael Ramirez, USA). They also paint other animals green, such as cats (Clay Bennett, USA) or even the Trojan horse itself (Branco, USA).

Metaphors make up an extensive set among the discursive strategies. One of the most popular metaphors is to portray the Earth as an object in the hands of unwise and incompetent people. Trump is also the subject of numerous metaphors, but especially his hairdo, which is the subject of all kinds of images alluding to CC (see Table 1). Furthermore, denialist cartoonists have developed a powerful metaphorical set against the Green New Deal. They treat it as a fairy tale or something unreal, using the unicorn as a recurrent metaphor (see Table 1).

Table 1

Metaphors Used in the Non-denialist and Denialist Cartoons

Non-denialist metaphors	
Donald Trump is:	1. an ice cap or an iceberg (Michael Kountouris, Greece; David Horsey, USA; Luc Descheemaeker, Belgium), 2. a hurricane (Matt Wuerker, USA; Marian Kamensky, Austria), or his hair is (Marian Kamensky, Austria; Popa Dar Es Salaam, Tanzania),

	- a chimney. Either his mouth is a chimney (Amorim, Brazil; David Horsey, USA), or the horns coming out of his head become one (Arcadio Esquivel, Costa Rica), and - a canary in a mine detecting greenhouse gases (Rick McKee, USA).
Al Gore is:	the sun radiating too much heat (Ann Telnaes, Sweden).
Earth is:	- a golf ball (Jimmy Margulies, USA; Steve Greenberg, USA; Shreyas Navare, India), - a bomb (Adam Zyglis, USA), - a fried egg (Ann Telnaes, Sweden), - a wrecking ball (Marian Kamensky, Austria), and - a melting ice cream (Arcadio Esquivel, Costa Rica).
The chimney is:	- a republican elephant's trunk (Nick Anderson, USA; Angel Boligan, Cuba), - a cigar George W. Bush smokes (Christo Komarnitski, Bulgaria), and - a couple of steaming horns coming out of George W. Bush's head (Monte Wolverton, USA).
CC is:	- a tsunami that will hit the coast (Sean Leahy, Australia), - a meteorite (Mike Luckovich, USA), and - a crocodile (Bill Day, USA).
Denialist metaphors	
Al Gore is:	a thermometer below zero (Ben Garrison, USA).
Obama is:	- portrayed as a weathervane (Lisa Benson, USA), - portrayed as "Climate Miss Universe" (Chip Bok, USA), and - portrayed wearing solar panels that look like blinkers which prevent him from seeing reality (Michael Ramirez, USA).
Donald Trump is:	a weathervane that points to "America First" instead of CC (Lisa Benson, USA)
Alexandria Ocasio-Cortez is:	- a frog (Bob Gorrell, USA), - a snowman (Lisa Benson, USA), - a joker in a deck of cards (Michael Ramirez, USA), and - a green alcoholic brew (Bart van Leeuwen, The Netherlands).
The Green New Deal is:	- a unicorn toy (Scott Stantis, USA), - a Dodo (Ken Catalino, USA), - a Trojan horse (Branco, USA), - a train wagon taking America to hell (Branco, USA), - a green car without wheels (Gary Varvel, USA), - a car without gas (Ken Catalino, USA), - an old-fashioned bus (Lisa Benson, USA), - an empty box of chocolates (Lisa Benson, USA), - a broken windmill in a wind farm (Gary Varvel, USA), and

	10. a vomit from Alexandria Ocasio-Cortez (Gary McCoy, USA).
Global warming is:	1. a papal ferula (Branco, USA), and 2. an iron rod to which Al Gore's tongue is stuck because of the cold (Michael Ramirez, USA).
Socialism is:	1. a jacket on a man who controls a puppet (Matt Margolis, USA), 2. a broken car (Gary Varvel, USA), 3. a bottle full of poison (Branco, USA), and 4. a flatulence (Bob Englehart, USA).
The Paris Agreement is:	1. an umbrella (Michael Ramirez, USA).
US EPA is:	2. a pair of shackles (Glenn Foden, USA), and 3. a canary in a mine that cannot detect greenhouse gases (Glenn Foden, USA).
Sea water is:	1. the blood from victims of terrorism (Branco, USA), and 2. the tears of the Democrats (Gary Varvel, USA).

Discussion

About 97% of scientists agree on both the causes and consequences of CC. However, less than 50% of Americans believe that human activity causes CC (Watts et al., 2019). Consequently, Americans are strongly divided. And what is more, this hinders the possibility of finding consensual solutions to the CC crisis.

The present study shows how polarisation is transferred into graphic humour. We show how, in general, both groups of cartoonists make little use of scientific information. However, the non-denialist cartoonists use more arguments based on scientific evidence than the denialists do. Denialist cartoonists virtually ignore scientific evidence, as they hardly ever use it (Figure 1), and when they do, it is in order to ridicule it.

It is striking how little the scientific evidence on CC is disseminated. In turn, most of the cartoons focus on disqualifying political opponents. They use coarse and vulgar arguments to disqualify them, which polarises opinions and impedes a calm and

constructive dialogue (Bohr, 2016). We can clearly see this polarisation with the activist Greta Thunberg. Non-denialist cartoonists portray her as a fearless girl committed to the environment, while denialists portray her as a hysterical, angry and unbearable girl, manipulated by the world's socialist forces. Significantly, the only explicit political characterisation of Thunberg comes from denialist cartoons.

We find that persuasion, used in both the image and its complementary text, is the most common discursive strategy. It is clear that cartoonists steer the conversation – they appeal to the readers' feelings rather than leading the reader to a rational reflection. According to Casals (2004), those who communicate in order to persuade use their expressiveness to influence the receiver. This way, they try to steer the intellectual positions of the receiver wherever they desire. Umberto Eco calls this a *sottile inganno* (Eco, 1968) – they appeal to issues of identity or personal beliefs rather than pure reason.

Furthermore, the work of certain denialist cartoonists could even qualify as purely propagandistic. They use manipulative arguments, which may be rhetorically successful, but are nonetheless biased to favour a political party and excessively demagogic. Michael P. Ramirez (USA) and A. F. Branco's (USA) cartoons highly exemplify this propagandistic quality. Both of them are very influential: the former is the winner of two Pulitzer Prizes, and the latter has a big presence on social media (42,000 followers on Twitter). They are very belligerent against democratic politicians. Michael and Branco consider them unpatriotic, communists, and, at times, linked to terrorists. Both of them drastically accentuate the dichotomy between the two parties. While the Republicans are linked to values that are deeply rooted in the USA, such as the Constitution or the flag, the Democrats are not, and can even be shown as being indifferent to those values or even opposed to them.

In any case, both denialists and non-denialists frequently use ad hominem attacks. Trump is portrayed as a brainless, rude and indecent fool, with his eccentric fringe and long red tie. Bush is portrayed as a mean, ignorant little man and Obama as a dangerous, enlightened man completely insensitive to terrorism. Gore is portrayed as an obese and

cynical scrounger, and Ocasio-Cortez as a hysterical, screaming woman, and a radical communist, one step away from becoming a Cuban guerrilla fighter. Only the Pope is spared the satire. He is applauded by the defenders of CC and is not mentioned by denialists, most of whom are religious (Kilburn, 2014).

Denialists rely on the increasing episodes of low temperatures as if this were inconsistent with global warming. This oversimplification of scientific information is blatant and possibly malicious (Fisher et al., 2013). CC predictions do not rule out extreme cold episodes. On the contrary, they show that there will be episodes of climate stress for both high and low temperatures (Kharin and Zwiers, 2004; IPCC, 2018). The denialist cartoonists interpret the heavy snowfalls that have affected the USA in recent years as proof against global warming. Thus, they depict concerned democratic politicians almost in despair because their doomsday predictions are not happening. This is a clear case of a fallacy of ambiguity, as it uses a false argument and intentionally misleads readers.

It goes without saying that political satire is part and parcel of graphic humour. Therefore, cartoonists will always make caricatures of political figures. Nevertheless, we find it very telling that a fundamentally scientific topic – such as CC and its consequences on biodiversity – prompts such little scientific debate. Instead, the debate is almost exclusively based on coarsely mocking a political adversary. As a result, cartoonists use many visual metaphors with a stereotypical image of nations, politicians and social actors in order to quickly get the message across (Charteris-Black, 2019). In some cases, a metaphor evolves and, like a meme, adapts to the media's ecosystem. Such is the case for Greta Thunberg's pigtails, which have become a symbol of the fight against CC (Domínguez, 2016; 2019).

On the other hand, we also find that the biodiversity shown in both groups of cartoons is limited to polar bears as if it were the only species affected by global warming. Clearly, polar bears, along with penguins, have become the symbols of CC (Manzo, 2010). However, the overuse of these animals isolates society from CC reality (Moreno et al., 2020).

The United States, the country where Thoreau, Burroughs, Audubon and many other exceptional naturalists lived, shows little concern for its natural heritage. Or, at least, this is what cartoonists show when they get caught up in stark political disputes (Dryzek and Lo, 2015) and forget to use other emblematic US species. For example, they forget ospreys, sequoias, monarch butterflies, otters, other species of bears (i.e., black and brown) and countless examples of their biodiversity. Ultimately, this causes the reader to become alienated and sceptical (Zhou, 2016).

Environmental policies cannot change depending on the politician of the day (Hahnel et al., 2019). They should be pursued in the interest of achieving a sustainable progress, where respecting the environment can coexist with a healthy economy and a scientific research apparatus that is as depoliticised as possible (Kousser and Tranter, 2018; Hardy et al., 2019). However, this paper shows that political polarisation on CC leads Republicans to consider as fake news everything that does not fit their peremptory political interests (Prasad, 2019), completely disregarding the strongest scientific evidence.

Their denial of CC is often accompanied by a strong populist bias (Wodak, 2019). They encourage citizens to ignore the problem and continue with their usual ways of living, assuming that this is a *volonté générale* or the will of the people. Wodak claims that in doing so, they also encourage an exclusionary ethno-nationalism.

Denialist cartoons often depict democratic leaders – be it Obama, Gore or Ocasio-Cortez – surrounded by a crowd shocked by environmentalist proposals. This is a clear example of an ad populum fallacy: it falsely argues that scientific questions have to be answered based on common sense or the opinion of the majority.

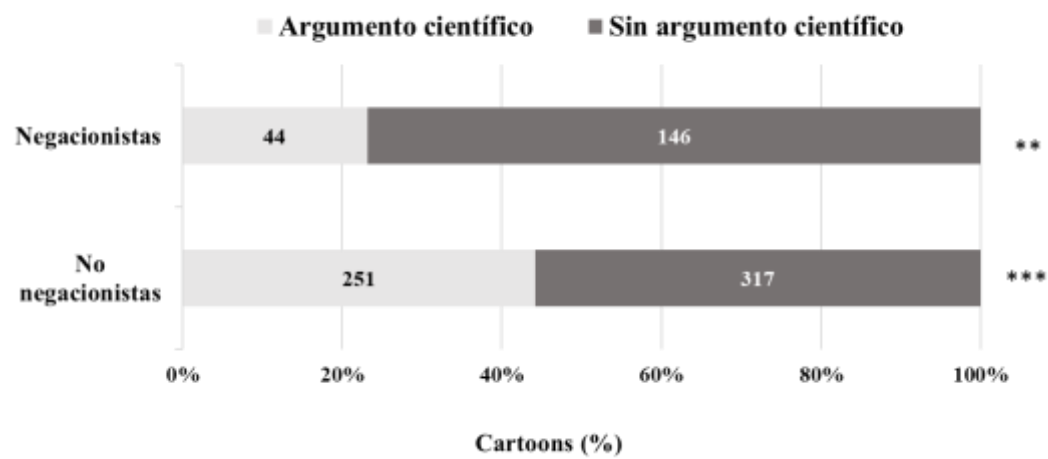
Conclusions

In this paper, we studied the way in which cartoonists have addressed CC in the USA, the main arguments they have put forward, and the different discursive strategies they have used. We found that cartoons provide little scientific evidence to back up their claims. This is especially true for denialists, who base the bulk of their arguments on discrediting and ridiculing the politician of the day, whether it is Al Gore, Barack Obama or Alexandria Ocasio-Cortez. Nevertheless, the majority of cartoonists defend CC. Non-denialists focus on replying to the different actions of republican politicians, especially Trump, and ridiculing them, but without getting into any scientific debate.

We, therefore, believe that cartoonists should use their platform not only to provide legitimate political criticism but also other necessary aspects that could help with the climate emergency that is affecting the whole world. We believe that the way CC is portrayed in cartoons can help to reach a greater consensus on CC (Hoffman, 2011) and depoliticise it, or at least reduce the tension between the two parties (Corry and Jørgensen, 2015; Chin et al., 2020).

We would like to offer a series of recommendations for cartoonists and the public regarding CC:

1. Avoid political confrontation. CC is not and should not be the property of any ideology. Therefore, polarising ideological views should not be a part of the CC debate.
2. Avoid using personal attacks (i.e., ad hominem attacks). If you are still going to attack a political adversary, lower the tone.
3. Use graphic humour to raise awareness of the problems caused by CC. If you do not believe in CC, provide scientific evidence that supports your belief.
4. Trust the integrity of the scientific community. Avoid trying to delegitimise scientific studies published in reputable journals, accusing them of deceitful and obscure economic interests.



Eje Y, de arriba abajo:

Denialists

Non-denialists

Eje X, de izquierda a derecha:

Scientific argument

Non-scientific argument

Title:

Cartoons

VI. Revision

In order for all of the track changes to be visible, I transformed the revision document to images. Please excuse this unusual format, but it is the only way I found for the revisions to be visible. Nevertheless, the proper revision document will also be available for you.

Jana.docx CAUTION: Do not change segment ID or source text MQ951111 f2231b98-a086-479d-a84c-f03084c0f0f5			
ID	Spanish	English	Comment
1	Climate change and political cartoons	Climate change and political cartoons	
2	Abstract	Abstract	
3	In this chapter the way in which political controversies in relation to the issue of Climate Change in the United States have been depicted by cartoonists is analysed.	In this chapter, we analyse how cartoonists have depicted political controversies <u>in the United States</u> regarding the issue of climate change. in the United States .	<u>It's about political controversies happening in the US regarding CC as a whole. Changing the order in the sentence makes that more clear.</u>
4	Cartoons as an opinion genre are extremely suitable and useful for this particular purpose because they represent a combination of image and text and create very efficient multimodal communicative content.	As an opinion genre. Cartoons as an opinion genre are extremely useful for this purpose because they represent <u>are</u> a combination of image and text and that create <u>creates</u> an efficient multimodal content.	1. <u>It makes the reading more smooth and easy when the idea is not cut in half by additional information that can be said at the beginning.</u> 2. <u>In my opinion, "represent" is pompous and incorrect because cartoons "are" a combination of image and text.</u>
5	Through the analysis of a corpus of a total of 758 such cartoons divided into the two categories of denialist and non-denialist, the different discursive strategies utilised by US politicians, which have had significant repercussion in the global public sphere, are observed.	In this article, we analyse a corpus of 758 such cartoons divided into two categories: of denialist and non-denialist. We observe different discursive strategies used by US politicians, which have had significant repercussions in the public sphere.	1. <u>Needless adverb</u> 2. <u>Collocation</u>
6	In addition to this, the main rhetoric fallacies and tools used by American politicians to dominate their political opponents, most of which are in fact completely wrong in scientific terms, are similarly observed.	In addition, we note the main rhetorical fallacies and tools that most of which are wrong in scientific terms the US politicians use to dominate <u>most of which are wrong in scientific terms</u> to dominate <u>argue against</u> their political opponents.	1. <u>I moved the parenthetical information so that the reader knows who they are talking about before the idea gets interrupted.</u> 2. <u>"Dominate" is a fickle friend.</u> <u>Collocation</u>
7	It comes as a surprise, in both denialist and non-denialist cartoons, that the use of non-scientific arguments for the acceptance or rejection of the existence of severe climate imbalance dominates.	When it comes to accepting or rejecting the existence of severe climate imbalance, it surprises us that the use of non-scientific arguments dominates in both denialist and non-denialist cartoons.	<u>Collocation</u>
8	Also visible is the distressing possibility that Climate Change may be non-reversible, as is and the necessity to implement environmental policies aimed at the reduction of greenhouse gas emissions.	The distressing possibility that climate change may be non-reversible is also visible <u>clear</u> , as is the need to implement environmental policies aimed to reduce greenhouse gas emissions.	<u>Idiomacity</u>
9	By way of conclusion, a list of recommendations is presented for cartoonists and the public as a	To conclude, we present a list of recommendations <u>addressed</u> to cartoonists and the public for avoiding political confrontation and	1. <u>The list of recommendations is "for" cartoonists, not "to" cartoonists.</u>

	means for avoiding political confrontation and the polarization of positions with regard to climate change.	position polarisation <u>polarizing positions</u> concerning climate change.	But because there is a "for" a few words away, I changed to "addressed to". 2. Idiomaticity
10	Keywords:	Keywords	
11	American politicians, cartoons, climate change, deniers, scientific evidence.	US politicians, cartoons, climate change, deniers <u>denialists</u> , scientific evidence	Consistency of terminology
12	Introducción	Introduction	
13	La postura de los políticos de Estados Unidos de América (USA) respecto al cambio climático (CC) nunca ha sido neutral (Jacques et al., 2008; Hamilton, 2011; McCright and Dunlap, 2011).	When it comes to climate change (CC), the position of politicians in the United States of America has never been neutral (Jacques et al., 2008; Hamilton, 2011; McCright and Dunlap, 2011).	
14	A pesar de albergar en su territorio algunos de los mejores equipos de científicos y a algunas de las más prestigiosas revistas dedicadas al estudio del CC, the acceptance of CC has always been controversial and a source of confrontation in the public arena (Boykoff, 2007; Brewer, 2011).	Despite being home to some of the best teams of scientists and the most prestigious magazines that study CC, the acceptance of CC has always caused conflicts in <u>been a source of conflict in</u> the public sphere (Boykoff, 2007; Brewer, 2011).	Idiomaticity
15	De hecho, la llegada de Donald Trump a la presidencia de Estados Unidos, durante el año 2017, significó un cambio rotundo en la política medioambiental de su país y agudizó de manera drástica la confrontación entre republicanos y demócratas (De Pryck and Gemene, 2017; Seo, 2018).	When Donald Trump became the president in 2017, the environmental policy of the United States changed completely. In addition, the confrontation between the Republicans and the Democrats worsened drastically (De Pryck and Gemene, 2017; Seo, 2018).	
16	Durante la legislatura anterior, bajo la presidencia de Barack Obama, se había avanzado en la política medioambiental, en especial en medidas proactivas para combatir el CC (Bombberg and Super, 2009).	However, during the term of his predecessor, Barack Obama, the environmental policy made progress, especially in the proactive measures that fight <u>against</u> CC (Bombberg and Super, 2009).	Collocation
17	Muchas de estas como consecuencia de la campaña del demócrata Al Gore, que en 2006 presentó la película <i>An inconvenient truth</i> , un éxito de taquilla donde denunciaba la grave crisis climática (su compromiso con el CC le reportó ser distinguido con el premio Nobel de la Paz, el año 2007) (Gozzer and Domínguez, 2011; Jacobsen, 2011; Nolan, 2017).	Many of these were a consequence of Al Gore's democratic campaign (Gozzer and Domínguez, 2011; Jacobsen, 2011; Nolan, 2017). Namely, in 2006, he presented the film <i>An Inconvenient Truth</i> , a blockbuster in which he exposed a serious climate crisis. Due to his commitment to CC, he won the Nobel Peace Prize in 2007. (Gozzer and Domínguez, 2011; Jacobsen, 2011; Nolan, 2017).	1. Sentence length. They don't specify who said what, but the rest of the sentences are consequences of the first one. So, I rather put the authors at the beginning and be able to split the long sentence into smaller ones. 2. Movie titles are italicized
18	De este modo, el CC ha figurado estos últimos años en la agenda política de los demócratas	This way <u>Therefore</u> , CC has appeared on the political agenda of the US Democrats in recent years (Unsworth and Fielding, 2014). It has	1. "De este modo" is working as a connector of cause and effect.

	norteamericanos (Unsworth and Fielding, 2014), convirtiéndose en un tema de amplia discrepancia con respecto al partido republicano, casi al mismo nivel que otros asuntos profundamente polémicos, como la gestión de la sanidad o las medidas antiterroristas (Dunlap and McCright, 2010; Elsasser and Dunlap, 2013).	become a subject of wide disagreements in the Republican Party, comparably to other controversial issues, such as health <u>healthcare</u> management or counter-terrorism measures (Dunlap and McCright, 2010; Elsasser and Dunlap, 2013).	Therefore, I think it's best to use another connector that reflects that. 2. Terminology
19	Esta discrepancia ha llevado a las élites del GOP (Grand Old Party, como se conoce a la formación republicana) a negar el CC, y a justificar las alteraciones climáticas escudándose en los motivos más dispares (Davenport and Lipton, 2017).	These disagreements have led the elite of the <u>Grand Old Party (GOP)</u> , i.e. (Grand Old Party, as the Republican Party is also referred to) , to reject CC, <u>justifying climate alterations with the most absurd of reasons explaining that climate alterations are hiding behind different motives</u> (Davenport and Lipton, 2017).	1. House style. Introduce the full term first and then the acronym. 2. Accuracy. The translation didn't reflect the message of the ST.
20	Con la llegada al poder de Trump, uno de los momentos más decisivos y quizá significativos de este cambio de rumbo del gobierno norteamericano fue la retirada del país del Acuerdo de París, en 2017 (Zhang et al., 2017; Gervasi, 2019), hecho trascendental para el propio país, pero también para el resto del mundo.	Besides Trump coming to power, one of the most significant steps for the US government to change course was to withdraw from the Paris Agreement in 2017 (Zhang et al., 2017; Gervasi, 2019). That was important not only for the country itself but also for the rest of the world.	
21	De este modo, uno de los actores fundamentales en la lucha contra el CC (además de ser uno de los países con un mayor potencial científico para su estudio y seguimiento), se retiraba de ese órgano de control y decisión, y daba un fuerte golpe de autoridad al <i>status quo</i> mundial (Goldstein and Greenberg, 2018).	In this way, one of the essential characters, <u>key player</u> -in the fight against CC-, who also has great scientific potential for studying and monitoring it, CC (apart from being one of the countries with great scientific potential for its study and monitoring) withdrew from that decision-making body and gave a powerful punch of authority to the world's status quo (Goldstein and Greenberg, 2018).	1. Sentence length and pointless repetition. In order to reduce the word count, I had to make some changes. Also, I took out a big chunk because in the previous sentence they already said that the US withdrew from the Paris Agreement. 2. Idiomaticity and fickle friends. "Key player" is more idiomatic and "actor" is a fickle friend. 3. Readability. I tried to connect the parenthetical information in a way that, hopefully, makes the sentence more smooth. The parenthesis felt very disruptive. 5. I'm not convinced that "powerful punch of authority" sounds idiomatic, although it is acceptable. I suggest:

			"...challenged the world's status quo with its powerful authority."
22	Estas decisiones políticas, tomadas por uno de los mandatarios más singulares y conflictivos de la reciente historia de EEUU, originaron en los medios nacionales e internacionales una enorme controversia (Betsill, 2017).	These political decisions – made by one of the most unique and conflictive leaders in recent US history – caused enormous controversy in the national and international media (Betsill, 2017).	Like this one, many other sentences are written to have parenthetical information that interrupts the main idea. I think that it hinders readability and motivation.
23	El carácter abiertamente negacionista de Trump contrastaba fuertemente con el de su predecesor Obama, e incluso con el de George Bush, más discreto en esta cuestión, aunque claramente alineado con las posiciones negacionistas (Lynch et al., 2010; Westmoreland, 2010; MacNeil and Patterson, 2020).	Trump's openly denialist character stand contrasted with that of his predecessors, Barack Obama and George Bush. Even though the latter was more discreet on this issue, he was clearly in line with the denialist viewpoint (Lynch et al., 2010; Westmoreland, 2010; MacNeil and Patterson, 2020).	False friend.
24	La fuerte e imprevisible personalidad del nuevo presidente unida al uso compulsivo que hace de las redes sociales (en concreto de <i>twitter</i>), lo convierten en un emisor directo de contenidos noticiosos, que tienen a su vez una repercusión casi inmediata y viral en la aldea global comunicativa (Ott, 2016; Allen and McAleer, 2018).	The new president's Trump's strong and unpredictable personality, as well as the his his compulsive use of social networks (particularly Twitter), allow him to propagate news/make him a direct news-propagator. New that That , in turn, have has an almost-viral an almost-viral impact on the ever-connected ever-connected global village (Ott, 2016; Allen and McAleer, 2018).	1. When translating into English, we should avoid that spanish tendency of calling many names the same thing. 2. In English we should use more pronouns (his compulsive use...) 2. Nominalization. Prefer verbs. 3. Needless adverbs. 4. You missed a part of the ST.
25	Asimismo, esta actitud combativa y sin complejos ha favorecido la polarización en la sociedad norteamericana (McCrigh et al., 2014; Dunlap et al., 2016), a su vez fuertemente reflejada en los <i>mass media</i> (Carmichael et al., 2017).	In addition, this combative and shameless attitude has favoured polarisation in the US society (McCrigh et al., 2014; Dunlap et al., 2016), which is, at the same time, strongly reflected in the mass media (Carmichael et al., 2017).	
26	En este trabajo se estudian las viñetas aparecidas en los <i>mass media</i> durante los últimos diecinueve años concernientes al CC y su relación con la actualidad política norteamericana.	In this article, we study the cartoons that have appeared in the mass media over the last nineteen years. These cartoons concern CC and its relation to the current US politics.	
27	El uso del humor gráfico resulta de gran utilidad para abordar la actualidad noticiosa, y para proyectar sobre la opinión pública los aspectos más atractivos y destacados de la misma (Dominguez, 2014; Dominguez, 2015 a and b).	Graphic humour is useful for addressing current events and projecting the most prominent aspects of public opinion (Dominguez, 2014; Dominguez, 2015 a, and b).	
28	Diversos estudios muestran cómo desde las	Different studies show how that cartoons express the public opinion on	

	viñetas se capta mejor la opinión pública respecto a temas particularmente conflictivos, y cómo estas consiguen manifestar mejor ese pulso que otros géneros periodísticos opinativos (Forceville and Urios-Aparisi, 2009; Dominguez and Mateu, 2014; Dominguez et al., 2014).	conflictive topics better than other opinion-based journalistic genres (Forceville and Urios-Aparisi, 2009; Dominguez and Mateu, 2014; Dominguez et al., 2014).	
29	En estas viñetas relativas al CC se entremezclan diversos asuntos de la actualidad, en un constante equilibrio entre su contenido puramente político y su parte científica, sea esta de tipo conservacionista generalista o bien aluda más concretamente a algún hecho aislado, como por ejemplo al último informe del IPCC (Intergovernmental Panel on Climate Change).	These CC-related cartoons intersperse the current events in a constant balance among their purely with political and scientific content. The latter scientific content may have a general conservationist nature or refer more to a specific case, such as the latest IPCC report (Intergovernmental Panel on Climate Change).	1. Readability. I had to reread this and go to the original. It's too pompous and complicated, specially for such a simple idea. 2. Avoid ambiguity. Here, "the later" is a confusing antecedent. And we're in luck because English doesn't mind repeating the subject.
30	En este sentido, resulta interesante abordar cómo desde el periodismo gráfico se reflejan estas cuestiones, y hasta qué punto entre las líneas argumentativas usadas por los viñetistas figuran evidencias científicas que refuerzan sus explicaciones.	Therefore, it is interesting to address how graphic journalism reflects these issues and to what extent do the cartoonists' arguments figure scientific evidence that reinforces their explanations.	
31	Así pues, este artículo busca determinar si las viñetas sobre el CC muestran argumentos científicos que las sustenten, o si, por el contrario, se dedican exclusivamente a atacar, cuando no a ridiculizar, a sus adversarios políticos.	On the one hand, this article tries to determine whether the CC cartoons show scientific evidence that supports them. On the other, we want to know if they only serve to attack political opponents, if not ridicule them.	
32	En este último caso, nos interesa determinar qué tipo de razonamientos siguen estos viñetistas y cuáles son las explicaciones que ofrecen a sus lectores sobre las causas del calentamiento global (Dominguez et al., 2017).	In the latter case, we try to determine what type of arguments these cartoonists support and what explanations they offer to their readers about the causes of global warming (Dominguez et al., 2017).	
33	Asimismo, nos interesa discriminar qué estrategias de argumentación y qué recursos retóricos usan los viñetistas para divulgar sus ideas sobre el CC, y si se inclinan más por la persuasión que por el convencimiento, o si caen en ocasiones directamente en la manipulación informativa.	We also want to distinguish the argumentation strategies and the rhetorical resources cartoonists use to spread their ideas about CC. In addition, we want to know if they lean more towards persuasion rather than conviction or if they sometimes directly manipulate fall directly into the manipulation of information .	Nominalization
34	Metodología	Methodology	In this section you started talking in the past so I made sure that it was consistent throughout.
35	Para desarrollar el estudio se han utilizado las principales herramientas de búsqueda en línea de	In order to develop this study, we used the main free-access web search engines.	

	acceso libre.		
36	Las bases de datos de imágenes utilizadas han sido Google imágenes, Caglecartoons, Cartoonstock, Cartoonistgroup, Cartoonmovement, Toonpool y Politicancartoons.	The image databases we used are Google Images, Cagle Cartoons, CartoonStock, The Cartoonist Group, Cartoon Movement, Toonpool, and Politicalcartoons.	
37	También se ha realizado una búsqueda en páginas de actualidad política ilustrada como gocomics.com, Townhall.com, Lambiek comiclopedia, Green Humor y usnews.com.	We also searched through the illustrated political news pages such as GoComics, Townhall, Lambiek Comiclopedia, Green Humour, and U.S. News & World Report.	
38	Las palabras clave utilizadas han sido "climate change" y "global warming".	We used the words 'climate change' and 'global warming' as keywords.	House Style, EU.
39	En el caso de las búsquedas en la herramienta Google imágenes hemos acompañado cada palabra clave con la palabra "cartoon".	The word 'cartoon' accompanied these keywords while searching through Google Images.	House Style, EU.
40	El periodo de búsqueda incluyó desde junio de 2001 hasta marzo de 2020.	The search period lasted from June 2001 to March 2020.	
41	Para el estudio se han seleccionado únicamente las viñetas relacionadas con la crisis climática que presentaban un contenido estrictamente político o ideológico en el marco contextual de USA.	For this study, we selected only the cartoons related to the climate change crisis. These cartoons present strictly political or ideological content in the US framework.	I believe "framework" is used in legal contexts rather than talking about a society.
42	Esto es, la representación de líderes políticos, de corrientes ideológicas, de políticas específicas, de organizaciones y de organismos públicos o privados relacionados con el clima o la preservación del medio ambiente.	In other words, they depict political leaders, ideological currents, specific policies, organisations, and public or private bodies related to climate or environmental protection.	
43	En este análisis se ha prestado también una particular atención a la caracterización de los políticos, metafórica o no, así como a otros aspectos satíricos y burlescos.	In this analysis, we paid special attention to the metaphorical or non-metaphorical characterisation of the politicians. We also include other satirical and burlesque aspects.	
44	De este modo se ha analizado la imagen en su contexto multimodal, estudiando el texto que las acompaña y determinando las principales estrategias argumentativas utilizadas, así como las principales falacias argumentativas (como ataque <i>ad hominem</i>) (Forceville and Renckens, 2013).	Therefore, we analysed the image in its multimodal context by studying the accompanying text and determining the main argumentative strategies and fallacies (such as ad hominem attack) (Forceville and Renckens, 2013).	
45	Para el estudio global de las viñetas se las dividió en dos grandes grupos: negacionistas y no negacionistas.	For a complete study of these cartoons, we divided them into two large groups of denialist and non-denialist.	
46	Se consideró que una viñeta era negacionista cuando ridiculizaba los postulados que defienden la existencia del CC y se criticaban medidas de corte ecológico, como reducir emisiones de	We considered a cartoon to be denialist when it mocked the hypotheses that defend the existence of CC and criticised ecological measures, such as reducing carbon emissions or protecting the environment.	

	carbón o proteger el medio ambiente.		
47	También se consideró negacionistas aquellas que atacaban a los políticos que abogaban por medidas restrictivas, como un descenso del consumo de combustibles fósiles, enmarcadas dentro del Green New Deal.	We also considered a cartoon to be denialist when it attacked the politicians that advocated for restrictive measures classified within the Green New Deal, such as reducing the consumption of fossil fuels.	Logic. Two contradicting ideas.
48	Y se consideró no negacionista si los argumentos que aparecían en la misma no negaban o defendían la existencia del CC.	We considered a cartoon to be non-denialist if its arguments defended CC, or did not deny it nor defend the existence of CC.	Accuracy. The translation doesn't reflect the message of the ST.
49	Finalmente, se estudió de cada viñeta si la argumentación desarrollada en la misma contenía evidencias científicas o no.	Finally, we examined whether the argument of each cartoon contained scientific evidence or not.	
50	Entendiendo por evidencias científicas si abordaban cualquiera de los seven state-of-the-climate indicators described by the Global Climate Observing System (GCOS, 2019), i.e., relacionadas con la alteración de temperature and energy (including surface temperature and ocean heat), de la atmospheric composition (incremento de la concentración del atmospheric CO ₂ concentration), del ocean and water (aumento de la ocean acidification and sea level), and de la cryosphere (deshielo de los glaciers and disminución de Arctic and Antarctic sea ice extent), considerando también un aumento de la frecuencia de incendios forestales, y de los fenómenos meteorológicos extremos así como la extinción de especies.	We considered evidence as scientific if it addresses any of the seven state-of-the-climate indicators described by the Global Climate Observing System (GCOS, 2019). That is the evidence related to the alteration of: temperature and energy (including surface temperature and ocean heat); atmospheric composition (increased atmospheric CO ₂ concentration); ocean and water (increased ocean acidification and sea level); and cryosphere (melting of glaciers and the decrease of the Arctic and Antarctic sea ice extent). We also evaluate-included the increase in the frequency of forest fires, extreme meteorological phenomena, and the extinction of species.	
51	Con anterioridad a la codificación de las viñetas en los dos grupos, se desarrolló un independent intercoder reliability test con dos coders independientes, para establecer la validez de los grupos siguiendo el modelo de Fleiss (1971).	Prior to coding the cartoons into the two groups, we developed an inter-coder reliability test with two independent coders to assess the reliability of the groups following the model of Fleiss (1971).	
52	Reliability was established using 76 cartoons, approximately 10% of the total sample.	We used 76 cartoons, which is approximately 10% of the total sample.	
53	The Fleiss' kappa coefficient for the two main groups (k = 0.932) indicated an almost perfect agreement according to standards (Wimmer and Dominick, 1996).	The Fleiss' kappa coefficient for the two main groups (k = 0.932) indicated an almost perfect agreement according to standards (Wimmer and Dominick, 1996).	
54	Once the reliability of the codification was confirmed, the whole sample was coded.	Once the reliability of the codification was confirmed, the whole sample was coded.	
55	La presencia o ausencia de argumentación	Then, we used a binomial test to analyse if scientific arguments were	

	científica dentro de las viñetas negacionistas y no negacionistas se analizó mediante una prueba binomial.	present in the denialist and non-denialist cartoons.	
56	Todos los análisis estadísticos se realizaron mediante el programa IBM® SPSS® Statistics Versión 26.	We performed every statistical analysis using the programme IBM® SPSS® Statistics, version 26.	
57	Resultados	Results	
58	Del muestro realizado por los buscadores antes citados se obtuvo un total de 758 viñetas, 568 no negacionistas y 190 negacionistas.	From the sample that we took from the mentioned search engines, we obtained a total of 758 cartoons: 568 non-denialist and 190 denialist.	I think this sentence could be easily shortened.
59	La mayoría de ellas provienen de viñetistas americanos (579), concretamente de USA (540), pero también hay provenientes de Europa (138), África (2), Asia (23) y Oceanía (16).	Most of them come from America (579), specifically the USA (540), but some also come from Europe (138), Africa (2), Asia (23), and Oceania (16).	Needless adverb.
60	[1] [2] La aparición de las viñetas se reparte a lo largo del periodo estudiado, pero con claros repuntes ligados a la actualidad informativa, tanto dentro como fuera de las fronteras norteamericanas, en momentos relacionados con sucesos concretos, como la Cumbre de París o algunos de los informes del IPCC.	The We found cartoons that met our criteria appear throughout the whole time period studied we set. However, there is a noticeable rise in the number of cartoons related to current affairs – both inside and outside the North American borders – that at times regard specific acts events, such as the Paris Agreement or some of the IPCC reports.	Readability. Hard to understand.
61	Si analizamos los discursos utilizados se observa que la proporción de viñetas no negacionistas que recurre a argumentos científicos es significativamente menor (44%) que las que utiliza argumentos científicos (56%) (P-valor < 0.0001).	If we analyse their discourses, we notice that the proportion of the non-denialist cartoons that resort to scientific arguments is considerably lower (44%) than the proportion of the ones that use non-scientific arguments (56%) (p-value < 0.0001).	Logical mistake in the ST. Considering the data in Figure 1, it should be: "Si analizamos los discursos utilizados se observa que la proporción de viñetas no negacionistas que recurre a argumentos científicos es significativamente menor (44%) que las que utiliza argumentos no científicos (56%) (P-valor < 0.0001)." Readability and sub-language. I would reject the sentence and start again because it's confusing and the style is not suited for scientific communications. I suggest: "When we analysed the discourses of non-denialist cartoons, we noticed that less than half of the cartoons use scientific arguments (44%), and the rest (56%) didn't use

			scientific arguments (p-value <0.0001)."
62	Y una situación similar se observa con la proporción de viñetas negacionistas que recurre a argumentos científicos (23%) siendo significativamente menor que las que utilizan argumentos no científicos (77%) (P-valor = 0.006) (Figura 1).	In addition, we have found a similar situation with the proportion of the denialist cartoons. The ones that resort to scientific arguments (23%), which is considerably lower (23%) than the ones that use non-scientific arguments (77%) (p-value = 0.006), (Figure 1).	
63	INTRODUCIR AQUÍ LA FIGURA 1	ENTER FIGURE 1 HERE	
64	<i>Believers vs. deniers: viñetas no negacionistas</i>	believers Non-denialists vs deniers: non-denialist cartoons	Consistency of terminology
65	Los viñetistas no negacionistas muestran el deterioro del mundo, la fusión de los polos, la pérdida de biodiversidad, las inundaciones, la sequía, los huracanes, las emisiones de CO ₂ , los incendios forestales y muchos otros fenómenos relacionados con el CC.	Non-denialist cartoons show: the world's deterioration, the melting of the poles, the loss of biodiversity, floods, droughts, hurricanes, CO ₂ emissions, forest fires, and many other phenomena related to CC.	
66	Como era previsible, Trump y el Congreso de los Estados Unidos constituyen dos de los <i>leit motifs</i> más utilizados, pero también aparecen caricaturizados el expresidente George Bush, y otros muchos políticos conservadores como Mitch McConnell, Gavin Christopher Newsom, John McCain, Scott Print, Jim Mattins, Rick Santorum, Marco Rubio, Willard Mitt Romney, Mitch McConnell, Karl Rove o Stephen Lee Johnson.	As expected, Trump and the United States Congress form two of the most used leitmotifs. Nevertheless, the caricature of former president George Bush also appears, as do the caricatures of many other conservative politicians. These politicians are, for example, Mitch McConnell, Gavin Christopher Newsom, John McCain, Scott Print, Jim Mattins, Rick Santorum, Marco Rubio, Willard Mitt Romney, Mitch McConnell, Karl Rove o Stephen Lee Johnson.	
67	Asimismo, políticos de otros países, como Andrew Scheer y Angela Merkel, líderes conservadores de Canadá y Alemania, respectivamente, aparecen en algunas viñetas.	Moreover, the politicians from other countries show up in some cartoons as well – Andrew Scheer and Angela Merkel, the conservative leaders of Canada and Germany, respectively.	
68	También el magnate Rupert Murdoch, dueño de un amplio grupo de la comunicación, aparece caricaturizado.	The caricature of Rupert Murdoch also appears. He is a media mogul and an owner of a large number of publishing outlets, also appears .	Strong starts. The verb should be in the first 6 to 7 words of the sentence. I think that the first sentence could be more idiomatic.
69	Pero sin duda, Trump protagoniza gran parte de las viñetas no negacionistas estudiadas (51,8 %).	However, Trump is undoubtedly one of the leading roles in our non-denialist cartoons (51.8%).	
70	Es presentado como un hombre arrogante, con su extravagante flequillo y su larca corbata roja (su corbata da la vuelta al mundo (Marian Kamensky, Austria), con el rostro colorado, de cuerpo	He is presented as an arrogant man with his extravagant fringe, a long red tie – the tie that travels around the world (Marian Kamensky, Austria) – a red face, and a podgy body and a long red tie – the tie that travels around the world (Marian Kamensky, Austria).	

	rechoncho.		
71	Aparece en numerosas viñetas destruyendo el legado ambiental de su predecesor Obama (Adam Zyglis, EEUU; Rob Rogers, EEUU) y el US EPA (United States Environmental Protection Agency) (Lisa Benson, EEUU).	In many cartoons, he destroys the environmental legacy of Obama (Adam Zyglis, USA; Rob Rogers, USA) and the US EPA (the United States Environmental Protection Agency) (US EPA) (Lisa Benson, USA).	House style.
72	En muchas otras aparece jugando con el globo terráqueo en sus manos (Sorit Gupta, India), o como un balón que considera suyo (Toby Morris, Nueva Zelanda), o al que da puntapiés (Bill Bramhall, EEUU), o incluso se lo come (Riccardo Marinucci, Italia; Arcadio Esquivel, Costa Rica).	He also plays with the Earth in his hands (Sorit Gupta, India) as if it were a ball he considered his (Toby Morris, New Zealand). In some cartoons, he hits it (Bill Bramhall, USA) or even eats it (Riccardo Marinucci, Italia; Arcadio Esquivel, Costa Rica).	
73	Trump aparece caricaturizado, desarrollando actos absurdos, que dejan en evidencia la falsedad de sus argumentos, como jugando al golf con el agua hasta la cintura (Marian Kamensky, Austria) (Figura 2A), o en medio de un incendio forestal (Dave Whamond, Canadá), obsesionado con las mujeres guapas (Nick Anderson, EEUU) (la única manera de que se fije en el CC).	The caricature of Trump acts absurdly, which exposes the falsity of his arguments. For example, he plays golf with the water up to his waist (Marian Kamensky, Austria) (Figure 2A), stands in the middle of a forest fire (Dave Whamond, Canada) and obsesses over pretty women (Nick Anderson, USA) – the only way that he gets interested in CC.	
74	A Trump se le insulta directamente "stupid idiot" (Pedripol, España), se le dibuja como un payaso (Marian Kamensky, Austria) o tirándose pedos (Michael Kountouris, Grecia).	Cartoonists insult Trump directly by calling him a "stupid idiot" (Pedripol, Spain) and representing him as a clown (Marian Kamensky, Austria) that farts (Michael Kountouris, Greece).	
75	En cuanto a George Bush, su predecesor republicano, es caracterizado con las orejas separadas, frente estrecha, nariz anquilosa y abierta, dientes prominentes, bajo de estatura y de aspecto algo simiesco, a veces demoníaco.	When it comes to George Bush, his republican predecessor, he is characterised by having protruding ears, a narrow forehead, a pointy and wide nose, prominent teeth, low height, and a somewhat ape-like or even demonic appearance.	
76	No obstante, las viñetas se muestran mucho menos agresivas que con Trump.	However, he seems less aggressive than Trump.	
77	Mike Peters lo dibuja ahogándose mientras dice "There... is... not... global... blurbing" (Mike Peters, EEUU) o representando a la Estatua de la Libertad levantando el dedo corazón, con unos documentos titulados Climate Change (Petar Pismestrovic, Serbia).	For example, Mike Peters (USA) portrays him drowning and saying: "There... is... not... global... blurbing". Petar Pismestrovic (Serbia) illustrates him as the Statue of Liberty, raising the middle finger and holding some documents entitled Climate Change.	
78	Respecto a los políticos demócratas tratados por los viñetistas no neacionistas estos son representados de manera mucho más amable y cercana.	The non-denialist cartoonists represent democratic politicians much nicer.	
79	Al Gore es presentado como Superman (Christo Komarnitski, Bulgaria) or	They portray Al Gore as Superman (Christo Komarnitski, Bulgaria) or	

	Komarnitski, Bulgaria), o como el gran abanderado de la protección del planeta (Arcadio Esquivel, Costa Rica).	as the big standard-bearer for planet protection (Arcadio Esquivel, Costa Rica).	
80	El viñetista suizo Patrick Chappatte presenta a Al Gore diciendo: "A Nobel Peace Prize against Global Warming" y a Bush replicándole: "There is no scientific consensus of the existence of peace".	In Patrick Chappatte's (Switzerland) cartoon, Al Gore says: "A Nobel Peace Prize against Global Warming", and Bush replies: "There is no scientific consensus of the existence of peace".	
81	Obama figura arrastrando un pesado equipaje (Petar Pismestrovic, Serbia), o vestido de doctor tomando el pulso al mundo (Pat Bagley, EEUU), o haciendo extrañas fórmulas para combinar economía con medio ambiente (Adam Zyglis, EEUU).	In some cartoons, Obama drags heavy luggage (Petar Pismestrovic, Serbia), takes the pulse of the world dressed as a doctor (Pat Bagley, USA) and makes strange formulas to combine the economy with the environment (Adam Zyglis, USA).	
82	Se celebran sus pequeños gestos (Mike Keefe, EEUU), aunque signifiquen bien poco.	Cartoonists celebrate his small gestures (Mike Keefe, USA), even if they do not mean much.	
83	No obstante, también se le critica su ambigüedad en algunos casos (Manny Francisco, Filipinas) y su política de acercamiento a China (Petar Pismestrovic, Serbia), compartiendo tablero de contaminación con el presidente chino Hu Jintao (Riber Hansson, Suecia, "Obama and Hu Jintao playing climate chess"), hasta el punto de que un viñetista le hace exclamar: "I'm becoming a climate change denier" (Joe Heller, EEUU).	However, they sometimes criticise his ambiguity (Manny Francisco, Philippines) and his policy of rapprochement policy with China (Petar Pismestrovic, Serbia): Riber Hansson (Sweden) even portrayed Obama and Hu Jintao playing climate chess (Riber Hansson, Sweden). Some even criticise him to the point of making him exclaim: "I'm becoming a climate change denier!" (Joe Heller, USA).	1. Spelling 2. House style. That is not the title of the cartoon so it shouldn't be italicized. 3. Accuracy. The translation doesn't reflect the message of the source text.
84	El reto que tiene por delante es enorme, junto a muchos otros problemas inminentes e igual de complejos (Joep Bertrams, Países Bajos).	He has an enormous challenge ahead, along with many other imminent and equally complex problems (Joep Bertrams, The Netherlands).	
85	En algunos casos, el viñetista equipara las políticas de demócratas y republicanos y les acusa de explotar de igual modo los recursos de la tierra (Adam Zyglis, EEUU).	In some cases, cartoonists compare the policies of the Democrats and to the Republicans, and accuse Democrats them of exploiting the earth resources in the same way (Adam Zyglis, US).	1. Collocation. 2. Unclear antecedent.
86	El conjunto de políticos republicanos es representado como elefantes, mientras que los demócratas como burros, atendiendo a los símbolos de su partido.	According to the symbols of their parties, the Republicans are represented as elephants and the Democrats as donkeys.	
87	Esto da lugar a viñetas conceptualmente sorprendentes, como elefantes en un iceberg deritiéndose, del todo ajenos a la situación (Taylor Jones, EEUU), o un oso polar mirando con rencor o charlando con un elefante (Pat Bagley, EEUU; John Trever, EEUU; Mike Peters, EEUU)	That results in conceptually surprising cartoons. For example, the illustration of elephants that stand on a melting iceberg and are entirely unaware of the situation (Taylor Jones, US), or a polar bear resentfully staring at or chatting with an elephant (Pat Bagley, USA; John Trever, USA; Mike Peters, USA) (Figure 2B).	Perhaps is less abstract and easier to understand if you say: "That results in cartoons with surprising concepts."

	(Figura 2B).		
88	Algunos Científicos republicanos, como el senador McConnell, celebran el frío del invierno como un ejemplo que evidencia la falsedad del CC (Joel Pett, EEUU; Jeff Danziger, EEUU).	Some of the republican scientists, like senator McConnell, celebrate cold winters as proof of CC falseness (Joel Pett, US; Jeff Danziger, USA).	
89	El gran nivel de consenso científico sobre el CC aparece en algunas viñetas, donde se muestran a los republicanos, muchas veces como elefantes, de espaldas a la comunidad científica, o bien dando validez a actores poco fiables ("Scientific consensus?")	A high The level of scientific consensus on CC appears in some of the cartoons that show the Republicans – often as elephants – turning their back on the scientific community or validating unreliable actors public figures. For example, Daryl Cagle (USA) writes in one of his cartoons: ("Scientific consensus? Ha! Doctors Mutubu and Wititi here both don't believe in climate change!" {Daryl Cagle, USA}).	1. The ST is confusing and that translated to the TT. 2. "Actor" is a fickle friend. Still, I'm not sure if "public figure" is the best option. 3. The sentence that was between parenthesis was poorly connected.
90	Ha!		
91	Doctors Mutubu and Wititi here both don't believe in climate change" (Daryl Cagle, EEUU), o tan sólo tomando los informes minoritarios que les son favorables (Pat Bagley, EEUU), o ridiculizando los informes técnicos (Mike Luckovich, EEUU), negando directamente la evidencia y justificándose, diciendo "I'm not a scientist" (Milt Priggee, EEUU).	They take favourable minority reports (Pat Bagley, USA), make fun of technical reports (Mike Luckovich, USA) or directly deny evidence and justify themselves by saying: "I'm not a scientist" (Milt Priggee, USA).	
92	Entre los argumentos esgrimidos por los republicanos para desmontar el CC es que este es consecuencia de "un ciclo climático natural" (Pat Bagley, EEUU).	One of the arguments that the Republicans use to take CC apart is that CC is a consequence of "a natural climatic cycle" (Pat Bagley, USA).	
93	Frente a la ciencia verdadera, Trump aparece representado como "Alternative science" (Rob Rogers, EEUU).	Faced with actual science, Trump is represented as "alternative science" (Rob Rogers, USA).	
94	Greta Thunberg también aparece en numerosas viñetas, en general en oposición a Trump.	Greta Thunberg also appears in many cartoons, generally opposed to Trump.	
95	Por ejemplo, los viñetistas juegan con las coletas de Greta contra el pelo enfurecido de Trump (Sandeep Adhwaryu, India), o incluso dibujan a Trump con las coletas de la niña activista (Ruben L. Oppenheimer, Países Bajos).	Cartoonists play with the activist girl's pigtails against Trump's shaggy hair (Sandeep Adhwaryu, India) and even draw Trump wearing them (Ruben L. Oppenheimer, the Netherlands).	
96	En varias viñetas se muestra a Greta como la única persona de fiar, incluso como la única adulta (Marian Kamensky, Austria; Bruce MacKinnon, Canadá).	Various cartoons show Greta as the only trustworthy person, even as the only adult (Marian Kamensky, Austria; Bruce MacKinnon, Canada).	
97	La encíclica del papa Francisco a favor del CC tuvo	Pope Francis' encyclical in favour of CC had bad reception among the	

	muy mala acogida entre los republicanos (Pat Bagley, EEUU; John Darkow, EEUU), que se vieron desautorizados por alguien a quien respetaban y que, <i>a priori</i> , consideraban uno de los suyos.	Republicans (Pat Bagley, USA; John Darkow, USA). They found themselves discredited by someone they respected and beforehand who they have always considered one of their own.	
98	Las presiones al Vaticano por parte de los políticos republicanos aparecen en varias viñetas de humoristas no neqacionistas. "Tu atiende a tu rebaño que yo atiende al mío", le dice al papa un empresario con un rebaño de elefantes, según el estadounidense Jimmy Marquies.	The pressure that the Republicans put on the Vatican appears in several non-denialist cartoons. For example, a Jimmy Marquies' cartoon (USA) in which the Pope is talking to a businessman with a herd of elephants, and the businessman says: "You take care of your herd while I take care of mine," says the Pope to a businessman with a herd of elephants, according to Jimmy Marquies (USA) .	Logic mistake in the ST. If we say "according to Jimmy Marquies", it means that he somehow mentioned that cartoon somewhere, not that he did it. And Marquies did draw that cartoon.
99	El papa aparece como un sacrilego por defender el CC (Nick Anderson, EEUU), o tapando la chimenea con su tiara papal (Nick Anderson, EEUU).	Cartoonists represent the Pope as a heretic because he defends CC (Nick Anderson, USA). They also draw him covering a chimney with his papal tiara (Nick Anderson, US).	
100	El político Rick Santorum increpa al papa y le dice que él sabe mucho más del CC (Jeff Danziger, EEUU), y James Inhofe le lanza una bola de nieve (Bruce Plante, EEUU).	In one cartoon, the politician Rick Santorum reproaches the Pope by saying he knows much more about CC (Jeff Danziger, USA). In another, James Inhofe throws a snowball at him (Bruce Plante, USA).	
101	El papa se enfrenta a algunos políticos republicanos como los hermanos Koch, y les exhibe el crucifijo como si fueran el anticristo (Jeff Danziger, EEUU) y otros directamente lo crucifican (Milt Priggee, EEUU).	The Pope even confronts certain Republicans, such as the Koch brothers. He shows them the crucifix as if they were the Antichrist (Jeff Danziger, USA). On occasion, the Republicans crucify him instead (Milt Priggee, USA).	
102	Marian Kamensky dibuja al papa dando la mano a Greta Thunberg, antes de ahogarse ambos, una aferrándose a un trozo de hielo y el otro a una cruz.	Marian Kamensky draws the Pope giving his hand to Greta Thunberg before both of them drowned. Greta is clinging to a piece of ice and the Pope to a cross.	
103	El mandatario de Roma es presentado en todas estas viñetas desde el respecto y la admiración, como un salvador del mundo (Bill Day, EEUU), casi como un héroe:	In all of these the non-denialist cartoons, the ruler-of-Rome Pope is presented with respect and admiration. Moreover, he is portrayed as pertrays the saviour of the world (Bill Day, USA) and a hero.	1. I clarified that because at first read it seems incongruent with what you've just read. 2. Spanish tendency to give many names to the same thing. 3. Accuracy. The translation didn't reflect the message of the ST.
104	John Darkow lo dibuja diciendo: "For all the climate change deniers out there!	For example, in John Darkow's cartoon, the Pope says: "For all the climate change deniers out there!	
105	Only Jesus can walk on water!"	Only Jesus can walk on water!"	
106	Tan sólo en una viñeta se recuerda los abusos pedófilos de la iglesia y se sugiere que la encíclica quizá busca ocultarlos (John Cole, EEUU).	Finally, only one cartoon recalls the church's paedophile abuses and suggests that the encyclical may want to hide them (John Cole, USA).	

107	INTRODUCIR AQUÍ LA FIGURA 2	ENTER FIGURE 2 HERE	
108	<i>Deniers vs. believers:</i>	Deniers vs. believers <i>(non-denialists vs. denialists:</i>	<i>Consistency of terminology. Same order as the previous title.</i>
109	<i>Viñetas negacionistas</i>	viñetas negacionistas	
110	Los negacionistas cargan tintas contra los políticos demócratas, especialmente contra los expresidentes Obama y Al Gore.	The denialist cartoons attack the Democrats, especially ex-presidents Obama and Al Gore.	
111	Otros políticos progresistas que aparecen en las viñetas son Hillary Clinton, Bernie Sanders, Nancy Patricia Pelosi, Mitt Romney, Alexandria Ocasio-Cortez y Jerry Brown.	Other progressive politicians that appear are Hillary Clinton, Bernie Sanders, Nancy Patricia Pelosi, Mitt Romney, Alexandria Ocasio-Cortez, and Jerry Brown.	
112	Barack Obama aparece como un político irresponsable, que se concentra en un problema menor como es el CC, desatendiendo al problema verdadero que es el terrorismo islámico.	Barack Obama is presented as an irresponsible politician who concentrates on minor problems, such as CC, and neglects real problems, such as Islamic terrorism.	
113	Muchos viñetistas de línea conservadora utilizan el mismo argumento hasta en quince ocasiones (Gary McCoy, EEUU; Randy Bish, EEUU; Steve Kelley, EEUU; Bob Gorrell, EEUU; Branco, EEUU) (Figura 3A).	Many conservative cartoonists use the same argument up to fifteen times (Gary McCoy, USA; Randy Bish, USA; Steve Kelley, USA; Bob Gorrell, USA; A.F. Branco, USA) (Figure 3A).	
114	Se refleja a un Obama obsesionado con el medio ambiente, traduciendo todo a emisiones de carbono (Gary McCoy, EEUU), sobornando a los científicos para que avalen sus teorías (Branco, EEUU), o incluso dejándose sobornar por las empresas verdes (Glenn MacCoy, EEUU), en algunos casos presentándolo como insensible a las brutales acciones de tortura de los rehenes del ISIS (Rick McKee, EEUU).	Obama reflects <i>is portrayed as</i> a person who obsesses over the environment, translates everything into carbon emissions (Gary McCoy, USA), bribes scientists to support his theories (Branco, USA), and is even bribed by green companies (Glenn McCoy, USA). In some cases, Obama is shown as someone who does not care about the brutal tortures of ISIS hostages (Rick McKee, USA).	<i>Idiomacity.</i>
115	Se le ridiculiza por su afirmación de "Climate Change causes terrorism" (Chip Bok, EEUU) y por el protagonismo que busca con esa defensa del clima (Chip Bok, EEUU).	Cartoonists make fun of his "Climate change causes terrorism" statement (Chip Bok, USA) and the alleged prominence <i>limelight</i> that he seeks by defending the climate (Chip Bok, USA).	<i>Idiomacity.</i>
116	Esta crítica se traduce a todo el partido demócrata: el viñetista Rick McKee dibuja a un feroz terrorista a punto de accionar un cinturón explosivo y a un burro (símbolo demócrata) exclamando: "It's climate change!!!!".	This criticism is transfered <i>reels</i> to the entire Democratic Party. The cartoonist Rick McKee draws a donkey (a democratic symbol) and a violent terrorist about to trigger an explosive belt shouting: "It's climate change!!!!"	<i>House style. You can't have two colons in the same sentence.</i>
117	Al Gore también recibe críticas mordaces, presentándolo como un oportunista, y persona de poco fiar, como un agorero (Gary McCoy, EEUU), y se le tilda de "Hysterical Global Warmer" (Eric	Al Gore also receives scathing criticism. Cartoonists present him as an opportunistic, pessimistic and untrustworthy person (Gary McCoy, USA). They label him as the "Hysterical Global Warmer" (Eric Allie, USA) and accuse him of alarming people with phrases such as <i>as</i> : "The	
	Allie, EEUU) o de propagar alarmismo con frases como "The sky is falling" (Rick McKee, EEUU).	sky is falling" (Rick McKee, USA).	
118	Muestran su incongruencia de pedir medidas contra el CC y su alto nivel de vida (Lisa Benson, EEUU), sus negocios dudosos (Henry Payne, EEUU; Chip Bok, EEUU; Branco, EEUU), y ridiculizan su libro "An inconvenient truth", que califican de "Al Gore's fantasía" (Lisa Benson, EEUU).	They show his <i>him doing</i> suspicious businesses <i>businesses</i> (Henry Payne, USA; Chip Bok, USA; A.F. Branco, USA), as well as the contradiction between the measures against CC he asks for and his high standards of living (Lisa Benson, USA). Cartoonists also make fun of his book An inconvenient truth <i>inconvenient truth</i> which they qualify as "Al Gore's fantasy" (Lisa Benson, USA).	
119	Incluso se lo compara con Joker (Gary Varvel, EEUU).	They also compare him to The <i>The</i> Joker (Gary Varvel, USA).	

Note: In the translation draft that you send me, I changed all of the quotation marks following the recommendations of the DGT Style Guide (EU), i.e. curly and single quotation marks. I didn't do it in here because it would have taken too long, and the curly quotation doesn't work well with this font.

VII. Budget

In order to apply for the job, I told the client how much I charge per word and the discounts I do. Since they could not send me the text during our first communications I did not send them a proper budget. Later on, the client specified that I would be working alongside a reviser and that we had to wait until their agency received an article that met a certain criteria. Once that happened, we had already settled on the price and agreed on a deadline during a videocall.

The following is the email I sent them when applying for their job offer:

Dear Recruiter,

I have been passionate about science ever since I started my Psychology degree. It was there that I realized how important it is to have up to date publications from around the world, so I applaud the work that you do. Now that I am studying a master's degree in professional translation, I look forward to making quality translations that contribute to the distribution of academic and scientific publications.

You will find my resume attached at the end of this email alongside a cover letter. As for the estimated cost, I charge 0,11€ per word. However, I do apply discounts for repetitions. If you have a glossary and/or a translation memory that you would like me to use, I will take those into consideration as well for the quote. No two projects are the same, so I will be glad to send in a detailed quote once, and if, I receive the document(s).

Best regards,

Desirée Viviana Borneo

VIII. Invoice



DESIRÉE V. BORNEO TRANSLATION

INVOICE #06-2021

Desirée Viviana Borneo
NIE Y7004376H
Calle Pedro Pablo, 19
33209 Gijón
dessborneomegmail.com

BILL TO

Castello Scientific Translations
Av. Catalunya, 35
4302 Tarragona
NIF: XXXX1684-T

INVOICE DATE

19-05-2021

DUE DATE

19-06-2021

DESCRIPTION	WORDS	REPETITIONS	FINAL WORD COUNT	UNIT PRICE	AMOUNT
Translation ES>EN	3,212	6	3,206	0.11 €	€352.66
Revision EN	3,427	0	3,427	0.03 €	€102.81
				SUBTOTAL	455.47
				IRPF 7%	31.88 €
				TOTAL	487.35 €

TERMS OF PAYMENT

Paypal: dessborneomegmail.com

or

Bank transfer: Banco de Sabadell, S. A. ES00 000 0000 0000 0000 0000

IX. Translation commentary

1. The Translation Process

1.1. Why and how

My first professional pursuit was Psychology. So I have been an avid reader of scientific papers, as well as academic literature for years now. During my degree I had the advantage, and privilege, of being an advanced English speaker. This gave me access to a number of papers and books that were not available in Spanish. I know first-hand how important it is to be up to date with the latest publications; and that is the need in the market that I want to tackle. All in all, this project was the learning opportunity I was looking for.

In my opinion, researchers and academics often prioritize content to form, overlooking linguistic clarity. The paper that I translated was not heavy on terminology. Instead, it was full of convoluted phraseology. Therefore, it was a great opportunity to focus on the syntax. My goal was to not only make an acceptable translation, but also to improve the text. Scientific texts usually disengage the reader and require to be re-read many times before getting a clear picture of what is being said. In order to steer clear of this tendency, I judiciously applied the guidelines that Kevin Costello taught in the Revising and Editing for Translators course. Therefore, I avoided:

1. nominalizations,
2. prepositional strings,
3. abstract nouns,
4. long sentences,
5. weak verbs,
6. underusing verbs,
7. overusing synonyms to talk about the same thing, and
8. passive sentences, especially long ones with the verb right at the end.

English is a hypercentral language and as such it is not uncommon for non-native speakers to translate into English. English is my L2, so I tried my best to follow these recommendations for translating scientific texts into your L2:

1. Use more documentation. That involves doing lots of research about terminology, phraseology and collocations, whether it be through monolingual and bilingual dictionaries, parallel texts, reading primary sources and glossaries, asking a friend, etc.
2. Do not guess. Most likely, you will find tacit knowledge on scientific texts – things that are considered basic or standard for that particular author or for that scientific discipline. You can choose whether to make explicit that information or not.
3. Be careful with common words that have uncommon meanings. That is to say, words that mean one thing in everyday life and another in scientific contexts.
4. Do more revisions, up to two or three. Also, have an external reviser (my FMDP partner).
5. Play it safe. Use less phrasal verbs and avoid complex grammatical structures; if needed, use strategic omission.
6. Work harder on the high-stakes sections.

All of these are a recommendations that our teachers gave us during the Scientific Translation course.

1.2. Steps

First, I printed the article and read it thoroughly. I wrote down notes next to each paragraph or couple of paragraphs pointing out what I understood, any information that was confusing, and how easy and motivating it was to read. I wanted to record my experience as a *naïve reader* in order to remember all the positives and negatives. Once you start translating, you read the text so many times that you can lose sight of those initial thoughts. Being that translation is not an exact science, I consider intuition and common sense as valuable resources in the translation process. Further down in my FMDP I will compare some of those notes with the final translation.

Second, I geared up with my *translator glasses* and red pen and re-read the article. This time I took note of the most important style editing guidelines that the text needed, factual information that needed to be checked, and logical mistakes on the source text (ST). The authors describe cartoons throughout the text, so part of the process included looking up those cartoons and making sure that the text faithfully and clearly described

them. That was a tedious and frustrating task, as I only had the cartoonist name and year of publication, but no title. For this search I used Google, Political Cartoons and GoComics. In hindsight, I should have asked the client for the data base with all the cartoons.

Third, I settled on machine aided human translation (MAHT). For this project I used SDL Trados and Microsoft Word, especially the Track Changes function. I tried two different approaches, one more experimental than the other. For the first half of the text, I pre-edited the Spanish text applying nine copy and style editing guidelines, as well as correcting any factual information that was wrong. When needed, I added personal pronouns, early verbs, and proper punctuation; and avoided nominalizations, dangling participles, ambiguity, the passive voice, negative sentences, and sexist language.

It is uncommon to pre-edit if you are not using machine translation, but I found it extremely helpful, especially as a novice translator. This way, I was able to segment the text before putting it through Trados; and I was not constrained by how the authors divided the sentences. Keep in mind that the average sentence length of the ST is 33, with some sentences over 50 words. What is more, I was able to free part of my working memory: I could focus on translating, rather than translating and applying all of the copy and style editing guidelines. Still, some of the guidelines could not be applied in the pre-edited text, so I listed them and applied them while translating. For example, I had to think about idiomaticity in the target text (TT) while translating, but not in the ST while pre-editing. In fact, sentences in the ST lost idiomaticity because I was applying guidelines for translating into English.

On the other hand, I only used Microsoft Word for the second half of the translation. Considering that I was not going to pre-edit it and that the ST does not employ much terminology, I decided to work with a simple word processor. I will compare both approaches in another section. By now, I had applied most of the Mossop's revision parameters. Because of that, once the translation was finished I did two revisions, mainly focusing on idiomaticity and mechanics (grammar, spelling, punctuation, house style...).

For the translation itself, my FMDP partner and I settled on the Interuniversity Style Guide as our first option for a house style, the DGT Style Guide (EU) as second, and The Chicago Manual of Style as third. We decided on British English given that the authors and us were in Europe. I used online dictionaries such as Oxford Dictionary,

Cambridge Dictionary and OneLook Dictionary that allows you to simultaneously see results from over 900 online dictionaries. For idiomaticity problems I used Ozdic, a collocation dictionary. For translating expressions and sayings, I resorted to some WordReference.com forum discussions. Since the text did not contain terminology I did not have to do terminology mining nor use any parallel corpus.

Next, my FMDP partner revised my translation and sent me her suggestions; and I did the same with hers. All of that was done with Track Changes. We shared resources and opinions in order to justify the changes we introduced. Finally, we sent each other the final version of our translation. As Project Manager, I put together both of our parts and incorporated minimal changes that I deemed necessary for publication. Most of the changes had to do with formatting (headings, subheadings, tables, figures). Since the guides that we were using did not give many details on this, we decided to use the American Psychological Association (APA) guidelines. This way, the paper would be fit for publication in most scientific journals.

Undertaking this project I encountered minor non-linguistic problems. Most of them had to do with technology. The first problem was downloading SDL Trados Studio 2019. Along with the licence number, we were given a download link. But it was an FTP link, and we were not given the credentials to access it. Only an admin with a valid username and password can access FTP links. So, through a Google search, I found another teacher from another university that claimed their students were having the same problem. Trados support team gave him a direct download link and that is the one I used.

The second problem had to do with getting Word to show me the readability statistics. Other users were having the same problem and getting stuck on the same step: the F7 button was not working. Because of that, the “File menu > Options > Proofing tab > Show readability statistics” did not produce any outcome. Thanks to Wordribbon.tips.net and some volunteer moderators on the Microsoft’s community page, I added the spell and grammar check option on my Word ribbon and that was the last piece of the puzzle.

2. Difficulties translating the article

2. 1. Descriptions of descriptions

Throughout the paper, and especially in the Results section, the authors had to describe how cartoonist portray politicians, public figures, and policies concerning climate change. This meant having to describe how cartoonist present other people and things. I am being repetitive because, on occasions, the authors described those people and things as if they were in fact that way. I consider that to be a mistake; one that is rooted in the lack of writing skills. Therefore, I edited those sentences in the TT. Please note that all of the following examples have a similar format to Track Changes, so it is easier to see the changes.

ST	TT
La muestran obsesionada con las vacas, a las que la activista política señala de ser parte del problema del CC debido a sus flatulencias (Sean Delonas, EEUU; Mike Lester, EEUU; Nemo, Canadá).	She is shown to be fixated on cows (Sean Delonas, USA; Mike Lester, USA; Nemo, Canada). <i>In these cartoons, Ocasio-Cortez's caricature claims</i> that cows are among the causes of CC due to their flatulence.

Here, the ST makes you question if Ocasio-Cortez says that or if it is a joke the cartoonist said about her. I prefer to make explicit such things, out of respect for the person addressed and to remain faithful to the citations you are doing. On the other hand, in an attempt to remain closer to the ST, my FMDP partner did not edit them. In the following table you can see a couple of examples.

ST	TT (FMDP partner)	My revision
Se le ridiculiza por su afirmación de “Climate Change causes terrorism” (Chip Bok, EEUU) y por el protagonismo que busca con esa defensa del clima (Chip Bok, EEUU).	Cartoonists make fun of his "Climate change causes terrorism" statement (Chip Bok, USA) and the <i>prominence</i> that he seeks by defending the climate (Chip Bok, USA).	Cartoonists make fun of his "Climate change causes terrorism" statement (Chip Bok, USA) and <i>the alleged limelight</i> that he seeks by defending the climate (Chip Bok, USA).

Muestran su incongruencia de pedir medidas contra el CC y su alto nivel de vida (Lisa Benson, EEUU), sus negocios dudosos (Henry Payne, EEUU; Chip Bok, EEUU; Branco, EEUU)...	They show his suspicious business (Henry Payne, USA; Chip Bok, USA; A.F. Branco, USA), as well as the contradiction between the measures against CC he asks for and his high standards of living (Lisa Benson, USA).	They draw Al Gore doing suspicious businesses (Henry Payne, USA; Chip Bok, USA; A.F. Branco, USA), as well as the contradiction between the measures against CC he asks for and his high standards of living (Lisa Benson, USA).
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In the next case, the ambiguity was introduced by the translator.

ST	TT (FMDP partner)	My revision
El mandatario de Roma es presentado en todas estas viñetas desde el respecto y la admiración, como un salvador del mundo (Bill Day, EEUU), casi como un héroe...	In all of these cartoons, the ruler of Rome is presented with respect and admiration. Moreover, he portrays the saviour of the world (Bill Day, USA) and a hero.	In all of the non-denialist cartoons, the Pope is presented with respect and admiration. Moreover, he is portrayed as the saviour of the world (Bill Day, USA) and a hero.

Note: the other changes attend to unclear antecedents and avoiding synonyms.

Having to do this type of descriptions can get very repetitive in structure (cartoonists represent democratic politicians as..., cartoonists show Greta as..., they draw Obama as...). It also means that you are saying the person or thing's name constantly. The Spanish language is very punitive against repetition in general. So the writer has to find new creative ways to mention the same things, to refer back to the subject, and so on. In the paper, the authors hardly ever repeated themselves. For us, translating into English, that posed some problems.

In English, it is not appreciated to address the same thing in many different ways, especially in scientific texts. Luckily, the solution was easy: using the same name. The

challenge was to find all of the names that needed changing and to remain consistent. For example:

ST	TT
Quizá el viñetista más virulento es el estadounidense Branco, que dibuja al apóstol de Roma abrazando a Karl Marx.	Perhaps the most virulent cartoonist is Branco (USA), who draws the Pope hugging Karl Marx.

The following examples address this problematic from different angles.

ST	TT
El país de Thoreau, Emerson, Burroughs, Audubon y de tantos otros naturalistas excepcionales, muestra poca sensibilidad por su patrimonio natural. O al menos así lo reflejan los viñetistas, que enzarzados en la disputa política más descarnada (Dryzek and Lo, 2015). olvidan utilizar otras especies emblemáticas norteamericanas...	The United States , the country where Thoreau, Burroughs, Audubon and many other exceptional naturalists lived, shows little concern for its natural heritage. Or, at least, this is what cartoonists show when they get caught up in stark political disputes (Dryzek and Lo, 2015) and forget to use other emblematic US species.

There, the authors avoid saying which country, most likely because in the following sentence they mention it – they are avoiding repetition. It is very confusing when you read it for the first time.

ST	TT (FMDP partner)	My revision
Se refleja a un Obama obsesionado con el medio ambiente, traduciendo todo a emisiones de carbono (Gary McCoy, EEUU)...	Obama reflects a person who obsesses over the environment, translates everything into carbon emissions (Garry McCoy, USA)...	Obama is portrayed as a person who obsesses over the environment, translates everything into carbon emissions (Garry McCoy, USA)...

“Se refleja” is one of the many ways to express how cartoonists present people and things. The translator did not notice that it was a fickle friend.

Furthermore, the authors translated the abstract into English, and some headings and sub-headings. Interchangeably, they would call non-denialist cartoonists, believers; and denialist cartoonists, deniers. So for consistency’s sake and to avoid needless synonyms, we decided to just use one (denialists and non-denialists).

2.2. The passive voice

Modern scientific journals and writing experts support the active voice over the passive voice. For a long time now, scientific communications have combined dangerous ingredients alongside passive sentences that create the recipe for boring, confusing texts. Nevertheless, the passive voice can be used when there is good reason to. I was surprised to find out that there were many good reasons for using the passive voice in this paper.

As I have mentioned before, in the Results sections, the authors heavily described the cartoons they analysed. The section was divided into two big chunks: the first half was dedicated to describing non-denialists cartoons, and the second to describing denialists cartoons. In each chunk, they usually took one or two paragraph to describe how the cartoons portray a certain politician, public figure or policy. It was a great opportunity to use the passive voice: I could emphasize the person or thing receiving the action, and I could avoid being too repetitive by saying variations of “Cartoonists illustrate him or her as...” What is more, in this case, the agent was irrelevant.

The authors’ goal was to summarize the different views cartoonists have on one particular politician, public figure or thing. They did not want to place the emphasis on who portrays them like that. So I consciously chose to use the passive voice. Even though it was challenging, I avoided sentences with a long subject and a verb dangling at the end, empty verbs in combination with a nominalization, and wordy, impersonal constructions. That way, the passive sentences had a purpose and were not done in the old, convoluted way.

To be exact, my final translation has a 16.1% of passive sentences. I started out with 29.6%. After doing two revisions, it decreased to 23.8%. Finally, with the help of

my FMDP partner, I managed to re-write sentences in the active voice where the active voice was preferable. Here are some examples where I chose to introduce or maintain the passive voice in my translation.

The next is a segment where I kept the passive voice, but improved it. The receiver of the action is introduced early on, and the nominalization was changed to a verb.

ST	TT
Entre los políticos demócratas opositores a Trump, destaca el ataque masivo a Alexandria Ocasio-Cortez...	Alexandria Ocasio-Cortez is one of the most targeted democratic and anti-Trump politicians.

Here, I wanted to emphasize the person that receives the action. It also helps the reader know that now the author will talk about another person. The paragraphs that follow are about the Pope.

ST	TT
Respecto al papa Francisco, los viñetistas conservadores lo respetan.	Pope Francis is mostly respected by conservative cartoonists.

This segment was a good candidate for using the passive voice, so I kept it.

ST	TT
Trump es presentado como un estúpido descerebrado, grosero e incontinente, con su extravagante flequillo y su larga corbata roja...	Trump is portrayed as a brainless, rude and indecent fool, with his eccentric fringe and a long red tie.

The passive voice has commonly been used to avoid personal pronouns. Scientists and academics claim that it conveys authority and objectivity, or that it is more modest. As I mentioned before, I strongly support modern technical writing. Therefore, every time it was clear that the authors did what they were talking about, I introduced a personal pronoun. I kept the style suited for scientific communication by being formal, adding standard adverbial phrases like “in this paper” and standard verbs like study, analyse, find, note, etc. For example:

ST	TT
Este trabajo estudia el modo en que los viñetistas han tratado el CC en EEUU y los principales argumentos esgrimidos, con su amplio y diverso conjunto de recursos retóricos.	In this paper, we studied the way in which cartoonists have addressed CC in the USA, the main arguments they have put forward, and the different discursive strategies they have used.
Se observa que en ellos hay muy poca evidencia científica, especialmente entre los negacionistas, que basan el grueso de su ataque en desautorizar y ridiculizar al político del momento, sea Al Gore, Obama o Alexandria Ocasio-Cortez.	We found that cartoons provide little scientific evidence to back up their claims. This is especially true for denialists, who base the bulk of their arguments on discrediting and ridiculing the politician of the day, whether it is Al Gore, Obama or Alexandria Ocasio-Cortez.

2.3. *Excessive parenthetical information.*

The authors of this paper had the tendency to put together many ideas into one very long sentence; and often, they were poorly connected. This negatively affected the smoothness of the text. On occasions, the main idea was interrupted by parenthetical information in a way that felt disruptive and made the reader go back and re-read. This was specially challenging because the parenthetical information was hard to put into a separate sentence. Most of the solutions included moving that information to a point of the sentence where it did not interrupt the flow of the main idea, or after the subject and verb were introduced.

In the following case, I decided to place the parenthetical information after the subject and the verb, so that the reader has a clearer picture of what is being said before it is interrupted. I also considered taking out this information, as it was already mentioned a couple of times. But my FMDP partner preferred to stay closer to the ST.

ST	TT (FMDP partner)	My revision
In addition to this, the main rhetoric fallacies and tools	In addition, we note the main rhetorical fallacies	In addition, we note the main rhetorical fallacies

used by American politicians to dominate their political opponents, most of which are in fact completely wrong in scientific terms, are similarly observed.	and tools —most of which are wrong in scientific terms— the US politicians use to dominate their political opponents.	and tools that US politicians use – most of which are wrong in scientific terms – to argue against their political opponents.
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Note: the other changes attend to fickle friends and idiomaticity.

The following is an example of poorly connected parenthetical information. Here, the information was very relevant so I chose to use a relative pronoun to make the sentence more smooth.

ST	TT (FMDP partner)	My revision
De este modo, uno de los actores fundamentales en la lucha contra el CC (además de ser uno de los países con un mayor potencial científico para su estudio y seguimiento), se retiraba de ese órgano de control y decisión, y daba un fuerte golpe de autoridad al <i>status quo</i> mundial (Goldstein and Greenberg, 2018).	In this way, one of the essential characters in the fight against CC (apart from being one of the countries with great scientific potential for its study and monitoring) withdrew from that decision making body and gave a powerful punch of authority to the world's status quo (Goldstein and Greenberg, 2018).	This way, a key player in the fight against CC, who also has great scientific potential for studying and monitoring it, challenged the world's status quo with its powerful authority (Goldstein and Greenberg, 2018).

Note: the other changes attend to sentence length, pointless repetition, idiomaticity and fickle friends.

In the following case, the parenthetical information worked better as an introduction to the main idea. Furthermore, the sentence has an antecedent (this). So, keeping the parenthetical information as it was in the TT would have made the antecedent unclear.

ST	TT (FMDP partner)	My revision
Cartoons as an opinion genre are extremely suitable and useful for this particular purpose because they represent a combination of image and text and create very efficient multimodal communicative content.	Cartoons —as an opinion genre— are extremely useful for this purpose because they represent a combination of image and text and—create efficient multimodal content.	As an opinion genre, cartoons are extremely useful for this purpose because they are a combination of image and text that creates an efficient multimodal content.

Note: the other changes attend to clarity and consicion.

2. 4. Citations in long paragraphs

In order to shorten some extremely long sentences, I had to change the order of their internal elements. That included the place of the citations. The authors have the habit of saying many different ideas in one long sentence and placing the citation at the end – usually more than one citation. For example:

Estas actitudes negacionistas a menudo tienen también un importante sesgo populista, alentando a la ciudadanía a desentenderse del problema y a seguir llevando el mismo ritmo de vida (en base a una supuesta voluntad générale or will of the people), así como reivindicando un etnonacionalismo excluyente (Wodak, 2019).

In cases like, there is no way to know who said what by just reading the ST. It is especially hard to figure out which are the authors ideas, and which are the ideas of the people they are citing. In hindsight, I should have asked the client for the text by Wodak, or ask for the bibliographical references in order to search for the text myself. Still, I feel hesitant about it. It would imply reading a whole article, perhaps a chapter in a book, to sort out one paragraph. My solution was to divide the text as logically as I could. Yet, this implied guessing, which is unadvisable.

I managed to shorten the previous example as it follows:

Their denial of CC is often accompanied by a strong populist bias (Wodak, 2019). They encourage citizens to ignore the problem and continue with their usual ways of living, assuming that this is a *volonté générale* or the will of the people. Wodak claims that in doing so, they also encourage an exclusionary ethno-nationalism.

I placed the main idea with a clear citation because the other ideas are a consequence of that one. If Wodak did talk about all of those things, I am satisfied with the placing of the citation. But I do not know for sure if Wodak wrote about all of those ideas or just the last one about ethno-nationalism. Since this problem happened more than once throughout the text, another solution could have been to hold a meeting with the client and discuss it. That would save time and reading effort.

2.5. Content mistakes and accuracy

The paper had both logic mistakes and incorrect factual information. The incorrect factual information was the easiest to revise. Every time the authors mentioned a general truth, dates or historical and public figures, I checked it on a google search. In one segment, they imply that Emerson was a naturalist, but he was not. He was primarily known as a philosopher and leader of the transcendentalism movement, a philosophical viewpoint of the human being and its relationship to the divine. That is not to say he did not write about nature, but not in a way that he was studying plants or animals.

The following is a mistake present in the ST:

Si analizamos los discursos utilizados se observa que la proporción de viñetas no negacionistas que recurre a argumentos científicos es significativamente menor (44%) que las que utiliza argumentos científicos (56%) (P-valor < 0.0001).

A literal interpretation of that segment would be that they compared non-denialist cartoons that use scientific arguments to all of the cartoons, denialists and non-denialists, that use scientific arguments. A case that would be problematic, because they would be comparing one sample (non-denialistas cartoons that use scientific arguments) to another sample that is partly made up by that same sample (denialists cartoons that use scientific arguments *and non-denialists cartoons that use scientific arguments*). It would be illogical, but possible from what they wrote.

The only way to be sure of what the authors meant was to see the data. In the bar charts, it was clear what they were trying to describe. Adding a couple of words would have described the data more accurately:

Si analizamos los discursos utilizados se observa que la proporción de viñetas no negacionistas que recurre a argumentos científicos es significativamente menor (44%) que las [viñetas no negacionistas] que [no] utiliza argumentos científicos (56%) (P-valor < 0.0001).

In the end, we opted for a simpler way of conveying the same idea:

When we analysed the discourses of non-denialists cartoons, we noticed that less than half of the cartoons use scientific arguments (44%), and the rest (56%) did not use scientific arguments (p-value <0.0001).

The following example made me question if it counts as a logic mistake, or if it is just ambiguous phraseology. In this case, the reader can intuitively know what is being cited but it is ambiguous nonetheless. I suggested to edit the following sentence because scientific texts should always be clear about what is being cited.

ST	TT (FMDP partner)	My revision
Las presiones al Vaticano por parte de los políticos republicanos aparecen en varias viñetas de humoristas no negacionistas. “Tu atiende a tu rebaño que yo atiendo al mío”, le dice al papa un empresario con un rebaño de elefantes, según el estadounidense Jimmy Margulies.	The pressure that the Republicans put on the Vatican appears in several non-denialist cartoons. For example, a Jimmy Margulies’ cartoon (USA) in which the Pope is talking to a businessman with a herd of elephants, and the businessman says: “You take care of your herd while I take care of mine.”	If we say "according to Jimmy Margulies", it means that he somehow mentioned that cartoon somewhere, not that he did it. And Margulies did draw that cartoon.

The following is an accuracy mistake that the translator introduced. In this case, the translation needed a simple transposition, because a literal translation would introduce a mistake.

ST	TT (FMDP partner)	My revision
Y se consideró no negacionista si los argumentos que aparecían en la misma no negaban o defendían la existencia del CC.	We considered a cartoon to be non-denialist if its arguments did not deny not defended the existence of CC.	We considered a cartoon to be non-denialist if its arguments defended CC, or did not deny it.

2.6. Idiomaticity and grammatical transposition

Grammatical transposition and idiomaticity often go hand in hand. Among all of the techniques, I mostly used simple transposition and modulation. I have chosen a couple of examples that include highly idiomatic expressions and modulation was a must, as well as other examples where simple transposition sufficed.

In the following example, the authors used a highly idiomatic expression (“atraer al lector a su terreno”). I tried to find an expression in English that included that image of *land*, but neither Proz.com nor WordReference.com had good solutions. Unable to come up with an equivalent expression by myself, I thought of one that conveyed a similar feeling. The verb *steer* popped in my head, and after a few google searches I found what I had in the tip of my tongue: to steer the conversation.

ST	TT
En definitiva, el humorista gráfico busca atraer al lector a su terreno, y para ello pone en práctica alusiones de carácter emocional, que se dirigen más a interpelar a los sentimientos del lector que a conducirlo a una reflexión estrictamente racional	It is clear that cartoonists steer the conversation – they appeal to the readers' feelings rather than leading the reader to a rational reflection.

Next, I encountered another highly idiomatic phrase. For my translation, I carried over the same meaning and used an idiomatic expression as well, but kept it simple and concise.

ST	TT
Las políticas mediambientales no pueden estar sujetas a cambios de rumbo en función de una <i>a priori</i> recomendable alternancia política (Hahnel et al., 2019),	Environmental policies cannot change depending on the politician of the day (Hahnel et al., 2019).

I applied modulation many times, whether for just one word or longer sentences. Here is an example of each case. Please note that I added italics so it is easier to follow.

ST	TT
Branco (EEUU) la presenta como <i>fruto</i> de un sistema educativo contaminado por la droga del socialismo	Branco (USA) presents Thunberg as the <i>product</i> of an education system contaminated by the drug of socialism
Se trata de un claro caso de falacia de ambigüedad, al utilizarse <i>un esquema argumentativo incorrecto</i> y <i>buscar crear de manera intencionada un equívoco en los lectores.</i>	This is a clear case of a fallacy of ambiguity, as it uses <i>a false argument</i> and <i>intentionally misleads readers.</i>

The authors used the Spanish linguistic device *se* a lot throughout the text. I believe all of them were verbs with passive meanings rather than reflexive verbs (*se observa, se muestra, se los representa, se traslada, se apela*). In any case, I always applied simple transposition to them.

ST	TT
Al primero se le asocian las palabras “cool & mild”, mientras que a Trump las de “hot & variable” (Phil Witte, EEUU).	Obama is associated with the words <i>cool</i> and <i>mild</i> , while Trump is associated with <i>hot</i> and <i>variable</i> (Phil Witte, USA).

Ciertamente, el oso polar, junto con el pingüino, se han establecido como símbolos del CC (Manzo, 2010)	Clearly, polar bears, along with penguins, have become the symbols of CC (Manzo, 2010).
Solo el Papa se salva de la sátira,	Only the Pope is spared the satire.

2.7. Peer reviews

Part of our job as scientific translators is to make the translation ready for publication. So it is my belief that we can make suggestions that increase the possibility of publication, even if they are not strictly linguistic. After reading all of the paper, I noticed that the way they expressed something at the beginning of the Results was potentially problematic. When starting to talk about the semantic resources used in the cartoons, they say: “La polarización en las viñetas del CC se observa claramente en el gran número de recursos semánticos destinados a convencer, si no a persuadir, al lector.”

Afterward, there is no discussion about trying to determine if the resources are aimed to convince or persuade. Briefly in the discussion, they do say that it is very clear that the cartoonists try to persuade the reader. And they go on to explain what persuasion is. Still, they do not make a case against convincing. In fact, the word *convencer* only appears once in the document. So, to avoid criticism from peers, I would suggest being careful with introducing concepts that will not be discussed afterwards.

My next concern had to do with the objectives of the research. Here is how they present them in the Introduction:

On the other, we want to know if they only serve to attack political opponents, if not ridicule them. In the latter case, we try to determine what type of arguments these cartoonists support and what explanations they offer to their readers about the causes of global warming (Domínguez et al., 2017).

Most likely they will receive criticism for citing another author on the objectives of their own research. It is not clear to me why they did it, but it probably was a miscommunication. In all of the other parts of the article where they talk about their objectives, they do not cite this or any other author.

I am still a novice translator that makes a lot of mistakes, especially because I do not come from a linguistic background. I feel like I need to gain more confidence and expertise with languages to be comfortable discussing the problems I mentioned in this section. Because of that, and the time constraint, I did not discuss them with the client.

2.8. Keeping the reader interested

My ultimate goal was to improve the text. To me, that meant applying the proper guidelines and techniques to keep the reader interested and to help the reader quickly understand the authors' work. All of the guidelines and techniques were equally important. Most of them have already been discussed in this dossier. Still, I would like to discuss a couple more because they had a big impact on the readability of the text.

The text was full of abstract nominalizations. It has been a learning curve to be able to notice them, but once they are spotted, they are easy to change. I tried to use more vigorous verbs instead, but in order to not stray so far from the text, I sometimes conformed with less impactful verbs. Here are a couple nominalization examples:

ST	TT
En ocasiones se observa una evolución metafórica...	In some cases, a metaphor evolves...
Entre los políticos demócratas opositores a Trump, <i>destaca el ataque masivo a</i> Alexandria Ocasio-Cortez...	Alexandria Ocasio-Cortez <i>has been one of the most targeted</i> Democratic and anti-Trump politicians.

A huge part of the translation and revision process was to simplify the sentences by making them clear and concise. Take a look at the following examples:

ST	TT (FMDP partner)	My revision
En estas viñetas relativas al CC se entremezclan diversos asuntos de la actualidad, en un constante	These CC-related cartoons intersperse current events in a constant balance among their purely political	These CC-related cartoons intersperse the current events with political and scientific content. The

equilibrio entre su contenido puramente político y su parte científica, sea esta de tipo conservacionista generalista o bien aluda más concretamente a algún hecho aislado, como por ejemplo al último informe del IPCC (Intergovernmental Panel on Climate Change).	and scientific content. The latter may have a general conservationist nature or refer more to a specific case, such as the latest IPCC report (Intergovernmental Panel on Climate Change) .	scientific content may have a general conservationist nature or refer more to a specific case, such as the latest Intergovernmental Panel on Climate Change (IPCC) report.
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In the previous example, the authors wrote with such verbosity that even a very simple idea was hard to understand. I applied strategic omission because the information was irrelevant and hindered readability. I think that my revision could have gone further in order to change *intersperse* for a less abstract verb.

Keeping the reader interested also meant applying parallel sentence structure. This was a must throughout the bulleted lists but also inside the text. Nevertheless, it was hard to remember, and also to apply, especially inside of a paragraph. I still need to practice it more, but I feel good with the outcome where I tried it. For example:

ST	TT
Algunos viñetistas muestran la incongruencia del calentamiento global con el hecho de las frías temperaturas alcanzadas en EEUU durante algunos meses de invierno...	Some cartoonists argue how incongruent global warming seems, given how cold some winter months were in the US.

I would say that the number one change that I did to keep the text clear and concise was reducing the average sentence length. This went hand in hand with fixing, and mainly adding, punctuation. The original text had an average of 33.3 words per sentence. My

translation without any revision had 17.1 and after the final external revision it went down to 15.3. The following is a very illustrative example:

ST	TT
Aunque alrededor del 97% de los científicos está de acuerdo sobre las causas y consecuencias del CC, los estudios muestran que menos del 50% de los americanos creen que el CC es causado por la actividad humana, algo que ocasiona una fuerte división entre sus ciudadanos y dificulta encontrar soluciones consensuadas a la crisis climática (Watts et al., 2019).	About 97% of scientists agree on both the causes and consequences of CC. However, less than 50% of Americans believe that CC is caused by human activity (Watts et al., 2019). Consequently, Americans are strongly divided. And what is more, this hinders the possibility of finding consensual solutions to CC.

X. Budget vs. invoice

I find that a rate of €0.11 per word is both compatible with the Spanish market and an acceptable monthly salary for me. Any translator should aspire to raise their prices alongside with their expertise and translation speed; and so is my case. The FMDP put us in a position where we could simulate working on a project as freelance translators. It should have taken us about a week, dedicating a full day of work. Instead, it took me two weeks. If every month I did two scientific translations of similar length than this project (4 weeks of work), I could reach an income of around €1.400 minus taxes. The taxes vary on the type of client and work, but I will use this project as an example for calculating them. Being a freelance in Spain (Autónomo), I would also need to subtract the monthly quote to be paid. The final income would be around €900. That is low, especially for big cities. But for my personal situation and where I live, it is a good starting point.

Please note that I find it acceptable if, and only if, I was hired as a translator for the whole article, and not as a reviser. A thorough revision requires a lot of attention to detail, and research. That, in turn, takes time. To me, it takes especially long, and it would not pay off financially. The difference in the invoice is striking: translating 3,206 words, €352.66; but revising 3,427 words, €102.81 – about 30% of the translation amount. As mentioned before, I am not too keen on revising, so it just does not pay off professionally nor financially. It implies too much work, time and training that I still do not have and would need to invest in.

Consequently, this particular project did not pay off for me. As far as the deadline, I find that two weeks is a challenge, but one that I can accomplish. Still, I need to put this into perspective. I tracked how many hours it took me to finish both the translation and revision. After adding all of the time, the result was about two weeks of full-time work. I could not dedicate a full day every day not only because of other responsibilities I had, but also because it was very tiring to translate for more than five hours. I have not done a job that involved so much reading and screen time before, and it was hard to maintain a typical full-time day of work. Nevertheless, I plan to start translating half-time and to organically add more workload. Like most things, I assume it will become easier over time.

Even though this project did not pay off financially, it paid off in other ways. The relationship with the client was good, and what I would hope for my future clients. They were clear about what they wanted, respecting of my expertise and accepting of reasonable deadlines. On the flip side, I would have like to hold more meetings with the client. As I mentioned before, I believe that in-depth conversations about the article would have enriched the final product. I believe that not many clients will have the time or interest to do this, especially if it is all done virtually. Nevertheless, it is not always necessary. In the future, I hope to build up the confidence to have meetings with the client discussing the article in order to improve it.

This project also paid off as a training experience. As a novice translator, I am open to work experiences that allow me to improve my resume and my skills, even if they do not pay well. For example, this project allowed me to see what type of article I could get paid to translate. Before this, I assumed only critical, top-notch articles were being translated. So in the near future, the only change I would make, is to avoid jobs that imply getting paid as a reviser.

XI. Conclusion

Doing a full-on project like this one proved to be an amazing learning opportunity. It challenged me in many ways and, most importantly, it helped me realize the type of work I want to do professionally. When I applied to the job offer I was happy to know that they did not mention anything about revising, because my previous experiences with revising were negative. But in the end, half of the work was to revise. So I would like to conclude comparing both roles.

After completing the master I feel confident in my abilities as a novice translator, and ready to start taking on projects. Still, I will try my best to work together with a reviser or in an agency that has revisers. I cannot stress enough how useful having an external reviser was. My FMDP partner noticed mistakes that would not have been acceptable as a final product. For example, I had not translated a couple of points in a bulleted list. Many revisions had to do with discarding the passive voice when it was not necessary and improving idiomaticity, especially in segments where it was clear that Spanish is my first language. For example translating “*creencias íntimas*” as “intimate beliefs” rather than “personal beliefs”.

A handful of the revisions had to do with house style guidelines, for example: when to capitalize *democratic* and *republican*, adding or omitting *the* when talking about Earth, etc. I have a hard time with the attention to detail and patience that revisions like this require. Revising was a difficult and tedious process, but it forced me to develop more linguistic skills and knowledge. On the other hand, I also made revisions that needed to be addressed before publication. For example, changing *payed* to *paid*, having two colons in the same sentence, improving idiomaticity, etc.

All in all, being a reviser helped me to improve as a translator. Now I am more conscious of the choices I make while translating. I thoroughly enjoyed translating into English, but I am conscious that I will need a reviser, and in a worst-case scenario, a comfortable deadline in order to do all the documentation that is needed.

It paid off taking the risk of trying two different approaches while translating. I was surprised to see how much I learned pre-editing the text. It helped me divide the translation process into smaller, simpler steps. On the flip side, it took more time. Still, I will definitely repeat this strategy, especially when working with CAT tools. This strategy also involves having a list, in paper, with all of the copy and editing style guidelines. That

way, I can check that I have applied the proper guidelines in every segment. I usually put a tick by the guidelines to increase the sense of accomplishment.

After rereading my notes as a *naïve reader*, I am happy to say that the experience I had with the final product is very different. Of course, it is not a proper comparison because I have read the article too many times by now. Nevertheless, much of the confusion I had with the ST decreased. I now could follow the ideas throughout the article and effortlessly understood what the authors did and how. There is definitely room for improvement, especially with what I mentioned in the Peer review subsection. The Flesch-Kincaid Grade Level of my translation is 11, which I found appropriate being a scientific text. The Flesch Reading Ease is 39.8, although my objective was to reach 50 to 55. I started out with 37.8 but only managed to get it up a couple of points. It eludes me what specific changes would increase the Reading Ease. Still, I know this is a profession that takes a lot of practice to perfect.