EL ANÁLISIS COMPOSICIONAL (CoDa) COMO HERRAMIENTA PARA EL MAPEO DE LA TEORÍA DE LA AGENDA-SETTING. ESTUDIO DE CASO DE LA OPINIÓN SOBRE POLÍTICA EN EL SISTEMA MEDIÁTICO ESPAÑOL, DENTRO DEL PERÍODO DE LAS ELECCIONES GENERALES DE 2015

Marc Blasco Duatis

Universitat de Girona

TESIS DOCTORAL

**EL ANÁLISIS COMPOSICIONAL (CoDa)
COMO HERRAMIENTA PARA EL MAPEO DE LA TEORÍA
DE LA AGENDA-SETTING**

*Estudio de caso de la opinión sobre política en el sistema mediático español,
dentro del período de las Elecciones Generales de 2015*

Marc Blasco Duatis

2018

TESIS DOCTORAL

EL ANÁLISIS COMPOSICIONAL (CoDa) COMO HERRAMIENTA PARA EL MAPEO DE LA TEORÍA DE LA *AGENDA-SETTING*

Estudio de caso de la opinión sobre política en el sistema mediático español, dentro del período de las Elecciones Generales de 2015

Compendio de publicaciones

Marc Blasco Duatis

2018

PROGRAMA DE DOCTORADO INTERUNIVERSITARIO EN DERECHO, ECONOMÍA Y EMPRESA

Dirigida por:

Prof. Dr. Marc Saez Zafra
Prof.ª Dra. Nuria Fernández García
Prof.ª Dra. Isabel Ferin Cunha

Memoria presentada para optar al título de doctor internacional por la Universitat de Girona

Universitat de Girona

El Prof. Dr. MARC SÁEZ ZAFRA de la Universitat de Girona, la Prof.ª Dra. NURIA FERNÁNEZ GARCÍA de la Universitat Autònoma de Barcelona y la Prof.ª Dra. ISABEL FERIN CUNHA de la Universidade Nova de Lisboa (Portugal), certificamos que este trabajo titulado, "EL ANÁLISIS COMPOSICIONAL (CoDa) COMO HERRAMIENTA PARA LA REPRESENTACIÓN DE LA TEORÍA DE LA AGENDA SETTING. ESTUDIO DE CASO DE LA OPINIÓN SOBRE POLÍTICA EN EL SISTEMA MEDIÁTICO ESPAÑOL, DENTRO DEL PERÍODO DE LAS ELECCIONES GENERALES DE 2015", que presenta MARC BLASCO DUATIS para la obtención del título de doctor, ha sido realizado bajo nuestra dirección y que cumple los requerimientos establecidos en las normativas aplicables. Informamos sobre la calidad científica e innovadora de la tesis, avalada por su buena acogida por las revistas donde ha sido publicada, y damos el visto bueno a su depósito, así como a los resúmenes divulgativos presentados. Dada la calidad de las publicaciones y su afinidad temática damos nuestra conformidad que se presente como compendio de cinco publicaciones.

Asimismo, se solicita, por medio de la presente, la mención internacional que reconoce al candidato como doctor europeo, una vez presentados los documentos acreditativos para tal efecto.
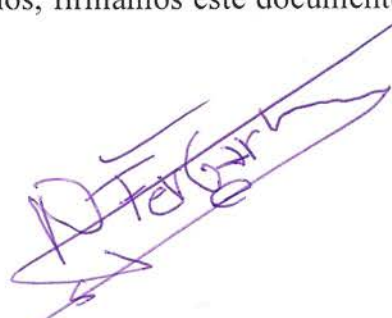
Finalmente, el director y las codirectoras de la tesis, en calidad también de coautores de uno o más de los cinco artículos –así como el Prof. Dr. GERMÀ COENDERS GALLART, coautor de dos de los cinco artículos– damos fe que MARC BLASCO DUATIS es el autor principal, y estamos de acuerdo que los

presente como parte de su tesis doctoral, y que estos artículos no puedan, por tanto, formar parte de ninguna otra tesis doctoral.

Y para que así conste y surta los efectos oportunos, firmamos este documento y lo damos a firmar al doctorando.
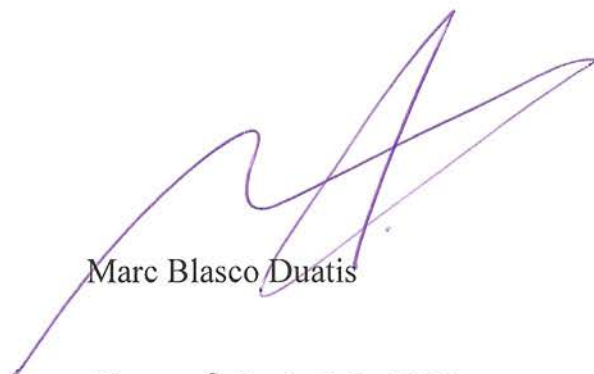
Prof. Dr. Marc Sáez Zafra

Prof.ª Dra. Nuria Fernández García

Prof.ª Dra. Isabel Ferin Cunha

Prof. Dr. Germà Coenders Gallart

Marc Blasco Duatis

Girona, 3 de abril de 2018

#FreedomCatalanPoliticalPrisoners

AGRAÏMENTS

El periodista polonès Ryszard Kapuściński afirmava a la seva obra *El Sha* que les paraules que circulen lliurement, paraules clandestines, rebels, paraules que no van vestides d'uniforme de gala, desproveïdes de segell oficial; son el catalitzador imprescindible, l'instrument de revolta, d'organització i de lluita contra el qual les armes del poder es revelen de forma completament ineficaç. En aquesta línia, les paraules al servei de la recerca, del compromís social amb el saber, no engalanades en va, sinó en benefici del coneixement global, brinden a l'investigador d'un dels escenaris més compromesos amb la cerca de la veritat que, a través de la convinença amb el pensar, anhela culminar un procés de transformació vital, intel·lectual i emocional, al temps que representa una de les poderoses eines de contra-poder en els nostres dies.

Posar punt i final a un profund compromís amb allò estudiat, a un treball que al mateix temps d'incitant i apassionant per moments esdevé tan ardu i ple de dificultats, fa ressorgir un inevitable i molt humà egocentrisme que et porta a circumscriure la major part del mèrit en allò que has aconseguit. No obstant, l'anàlisi objectiu et demostra immediatament que la magnitud d'aquesta aportació hagués estat impossible sense la participació de persones i institucions que han facilitat les coses perquè aquest treball arribi a bon port. Per això, és per a mi un veritable plaer utilitzar aquest espai per ser just i conseqüent amb elles, expressant els meus agraïments.

A en Marc Saez, Director d'aquesta Tesi Doctoral, li vull agrair per sobre de tot el seu compromís amb la veritat, amb l'ensenyament y la ciència, així com amb el llegat més valuós que pot transmetre la figura d'un professor: el pensament crític. La seva acollida quan d'altres feien soroll, el seu suport i confiança en el meu treball i la seva capacitat per temperar les meves idees posant-les al servei

de la investigació, no només han suposat el període intel·lectual més fructífer de la meva vida, sinó que al mateix temps m'ha fet entendre i compartir el respecte amb el saber. Gràcies pel teu gest de compromís amb qui vol aprendre. Gràcies per la llibertat acompanyada que m'has regalat aquest temps. Gràcies per sotmetre el poder de la càtedra a la responsabilitat amb el coneixement!

A la Nuria Fernández i a la Isabel Ferin, codirectores de la dissertació, el meu agraïment més sincer. A tu, Nuria, de qui guardaré per sempre la sensibilitat amb la vida, el compromís amb les persones per sobre de la 'institucionalitat' i l'esperit crític de lluita efectiva en aquesta 'bombolla' que és la Universitat. Gràcies per brindar-me la teva proximitat que en moltes ocasions m'ha servit per seguir creient en un entorn cada cop més hostil i pervers. A ti, Isabel, agradeço especialmente o teu acolhimento por segunda vez em Portugal. Eu, filho de docentes de ensino secundário, sei que há professores que marcam a vida das pessoas. Você, nesse estagio em Coimbra no curso 2011/2012, conseguiu mudar substancialmente a minha forma de ver o mundo e, por tanto, a maneira em que queria conviver em ele. Esta tese valoriza também essa aprendizagem e reivindica o trabalho transformador de pessoas como você. Obrigado professora!

A en Germà Coenders, de qui vull reconèixer aquí la seva tasca com a segon director de la tesi. El teu temps, càtedra, docència i suport en un terreny pantanós on jo vaig començar trepitjant amb xancletes, han estat, com m'hi referia inicialment, una de les aportacions centrals que han dotat de sentit a aquesta dissertació. Quan la docència és tant continuada i altruista, qui vol aprendre només s'ha de deixar portar. Gràcies per fer-me entendre que ni el camp fa el mètode, ni el mètode fa el camp. Gràcies per compartir amb mi els teus anys de saber i de feina constant. Gràcies per fer-me viure una realitat completa de qui quan pensa en fer estudis superiors, imagina docències com la teva!

Gràcies als meus mestres. Gràcies també a vosaltres sóc qui sóc i avui puc presentar aquesta tesi. Gràcies a la Imma Dot, la Carme Colomer, l'Eulàlia i en Vicenç Ros, mestres de primària de qui guardo grans records d'una infantesa plena de preguntes i inquietuds; a en Carles, en Joan Ristol, la Nuri Corredor, la Carme Vall, en Joan Ramón Pons i en Josep Sànchez, professors de secundària que varen respondre moltes de les meves preguntes i en varen generar encara més; a la Glòria, la Mercè Pi, en Francesc, en Gerard i en Xavi Lloses, professors de música a l'Escola Municipal de Música de Premià de Mar i Sant Feliu de Guíxols, i al Conservatori de Girona, a qui dec l'aprenentatge del llenguatge més universal de les persones; e ao Doutor Carlos Camponez, professor da Universidade de Coimbra a quem sempre vou lembrar como aquele que despertou em mi o pensamento crítico desde um olhar académico. Gràcies, mestres!

Un agradecimiento especial también para con quienes estos últimos años han pasado a formar parte de mi vida. Gracias por el acogimiento y el calor en mis visitas por tierras navarras, Esther, Raquel y Jaime; por las palabras que hablan de vida vivida, Tere y José Luís; por la complicidad y el cariño, Chus y Salinas; por el sentirme como en casa, Luisa, Javier, Diego y Maestro; por subirme a tres mil metros a respirar, Txema; por compartir momentos de vida y verdad, Carlos, Iranzu y Leire; por descubrirme nuevos horizontes y formas de ver la vida, Patricia y Rubén; por hacerme cómplice de la felicidad en la sencillez, Uxue y Unai; por tener amistades de valor y compromiso con lo social, Amaia; per tenir amistats amb qui seguir compartint 'perquès', Lídia.

I per sobre de tot, a vosaltres: avis, mare, pare, germà, i a tu, Amaya. A tots vosaltres va dedicada aquesta tesi. A tots vosaltres us dec molt especialment ser qui sóc, la meva formació i l'amor pels altres. El vostre orgull és, en realitat, la millor recompensa que un pot tenir en acabar d'escriure aquest treball. Que el

pensar i el combatre dels qui van ser, sigui i perduri en els qui som, per llegar-lo als qui seran!

I finalment, a vosaltres, qui des de l'exili, la presó o la crueltat de la repressió m'heu despertat pensaments i reflexions continus d'aquesta lluita compartida, i eterna, que és la llibertat de les persones. Llibertat!

Gràcies a tots. Obrigado a todos. Gracias a todos!

Marc Blasco Duatis
Girona, 20 de març del 2018

LISTA DE PUBLICACIONES RESULTANTES DE LA TESIS

Blasco-Duatis, M., Fernández García, N., Cunha, I. (2017). Political opinion in the Spanish newspapers. Analysis of the period General Elections campaign in Spain, 2015. *Revista Latina de Comunicación Social*, 72, 349-373. DOI: 10.4185/RLCS-2017-1169en. SCOPUS 47/293, –Q1–, (categoría 'Social Sciences: Communication', SJR=0,823, datos de 2016); incluida en el Emerging Sources Citation Index (WOS).

Blasco-Duatis, M., Coenders, G., Sáez, M. (aceptado). Representación composicional (CoDa) de la agenda-setting de los opinantes sobre política en la prensa escrita española durante las Elecciones Generales de 2015. *Estudios sobre el Mensaje Periodístico*, 24, 2. SCOPUS 116/293, –Q2–, (categoría 'Social Sciences: Communication', SJR=0,355, datos de 2016).

Blasco-Duatis, M., Coenders, G., Sáez, M., Fernández García, N., Cunha, I. (en revisión). Mapping the agenda-setting theory, priming and the spiral of silence in Twitter accounts of political parties. *El Profesional de la Información*. SCOPUS 45/211, –Q1–, (categoría 'Social Sciences: Library and Information Sciences', SJR=0,541, datos de 2016); ISI Social Sciences Citation Index, –Q3–, (JIF=1,063, datos de 2016).

Blasco-Duatis, M., Sáez Zafra, M., Fernández García, N. (2018). Compositional representation (CoDa) of the agenda-setting of the opinion makers on politics in the main Spanish media groups in the 2015 General Elections. *Communication & Society*, 31, 2, 1-24. SCOPUS 96/293, –Q2–, (categoría 'Social Sciences: Communication', SJR=0,434, datos de 2016); incluida en el Emerging Sources Citation Index (WOS).

Blasco-Duatis, M., Coenders Gallart, G., Sáez Zafra, M. (2018). Compositional visualization of intermedia agenda setting by the main media groups and political parties in the Spanish 2015 General Elections. *Revista Latina de Comunicación Social*, 73, 264-292. DOI: 10.4185/RLCS-2018-1255-14en. SCOPUS 47/293, – Q1–, (categoría 'Social Sciences: Communication', SJR=0,823, datos de 2016); incluida en el Emerging Sources Citation Index (WOS).

LISTA DE ABREVIATURAS Y TRADUCCIONES

AS: Agenda Setting

MMC: Medios Masivos de Comunicación

MIP: Problema Más Importante

CoDa: Análisis de Datos Composicionales

20D: Cita electoral del 20 de diciembre de 2015

PP: Partido Popular

PSOE: Partido Socialista Obrero Español

Podemos: Podemos

C's: Ciudadanos

IU: Izquierda Unida

ACP: Análisis en Componentes Principales

Mass Communication Research: Investigación en Comunicación de Masas

Agenda-Setting: Fijar la agenda

Most Important Problem: Problema Más Importante

Spiral of silence: Espiral del silencio

Priming: Saliencia o priorización

Stream: Transmisión de datos

Issues: Temas de la AS

LISTA DE TABLAS

TABLA DE CONTENIDO

RESUM

Des que a inicis de la dècada dels anys setanta els investigadors Maxwell McCombs i Donald Shaw publiquessin l'obra seminal de Chapel Hill sobre la teoria de l'agenda-setting (AS), els seus acadèmics han abordat, fonamentalment, les investigacions mitjançant dues eines metodològiques: una primera fase d'anàlisi de contingut, emprada per estudiar la cobertura noticiable i, per tant, la prominència o saliència de determinats temes o atributs a l'agenda; i un segon estudi de naturalesa estadística, basat en la verificació del nivell de correlació existent entre els temes, els seus emissors o el global de les diferents agendes. L'anàlisi dels continguts generalment s'ha enfocat en la importància relativa o comparativa d'alguns temes sobre uns altres. Se suposa que alguns mitjans o actors socials estan més ocupats que altres en determinats temes, el que ha portat a un estudi general del volum relatiu d'informació, en detriment de l'anàlisi detallada del contingut. Aquestes diferències (o similituds) s'han avaluat tradicionalment a partir de la comparació de les freqüències dels seus continguts principals, que, per mitjà de les correlacions de Spearman entre els emissors, han fomentat una anàlisi sobre l'ordenament jeràrquic, menyspreant les diferències relatives o absolutes i, per tant, qualsevol altra informació.

A la vista d'aquesta necessitat, i per resoldre aquests procediments quan l'interès resideix en la importància relativa de les parts d'un tot, la tesi aborda l'anàlisi de dades composicionals (CoDa), fonamentat per Aitchinson el 1982, juntament amb la representació gràfica a través de biplots, impulsada per Gabriel el 1971, per a l'estudi i mapeig de la teoria de l'AS. L'interès en CoDa resideix en la proporció de cada part o component, ja que les quantitats absolutes són irrellevants i només exposen la mida de la mostra. Un problema molt similar en tots els aspectes al que s'estableix en l'estudi de l'AS, on les dades absolutes són irrellevants i

majoritàriament apunten sobre la temàtica del contingut, la intencionalitat d'aquest, la popularitat de l'emissor, etc. En aquesta línia, només les proporcions de cada categoria de contingut o la grandària relativa d'un tipus de contingut sobre un altre, són veritablement informatius.

D'acord amb aquestes premisses, la present tesi doctoral s'estructura en cinc articles que distingeixen l'originalitat de l'estudi en presentar el CoDa-biplot com a eina per al mapeig i estudi composicional de la teoria de l'AS. Servint-se del període de les Eleccions Generals a Espanya de 2015, la tesi es presenta com una unitat temàtica que aborda, al llarg de cinc publicacions, el mapeig i estudi composicional de la teoria de l'AS de l'opinió sobre política en el sistema mediàtic espanyol (agenda dels mitjans), així com de les comunicacions de caràcter polític a Twitter dels principals partits espanyols (agenda política). Així mateix, l'estudi agregat de les dues agendes (la dels mitjans i la política) ens permet abordar l'anàlisi i representació de la intermèdia AS.

En aquesta línia, el primer article desenvolupa l'aproximació més elemental a l'estudi de l'AS, a partir de l'anàlisi de l'opinió sobre política publicada pels principals rotatius d'informació generalista de la premsa escrita espanyola. Aquest primer estudi ens va permetre aprehendre els temes sobre política que van suscitar una major atenció, per al posterior estudi de l'AS en el terreny composicional. Així, la segona publicació presenta i desenvolupa el CoDa-biplot com una aproximació metodològica innovadora per a visualitzar i analitzar la teoria de l'AS. Per il·lustrar la viabilitat de les eines composicionals, desenvolupem una anàlisi de contingut dels articles d'opinió sobre política del primer article, obtenint la primera representació composicional de l'AS, en aquest cas de l'agenda dels rotatius.

El tercer i quart article representen una aplicació de l'eina CoDa-biplot a l'estudi de l'agenda política i de mitjans, respectivament. Concretament, la tercera publicació desenvolupa una anàlisi de contingut dels missatges publicats en els comptes oficials de Twitter dels principals partits polítics, obtenint la primera representació composicional de l'agenda política. Per al quart article, recollim les dades sobre l'estudi composicional de l'AS en la premsa escrita i les complementem amb una nova anàlisi de contingut sobre els principals programes d'opinió política de la ràdio i televisió espanyola, completant així la representació composicional de l'agenda mediàtica dels principals grups de mitjans espanyols.

Finalment, el cinquè article utilitza les dades agregades de l'anàlisi de contingut de l'agenda dels mitjans i de l'agenda política de les anteriors publicacions, per inferir, a partir de l'eina del CoDa-biplot, la intermèdia AS. L'estudi completa els resultats de la tesi en la seva aportació al mapeig dels processos d'intermediació de les agendes de diferents actors, alhora que permet realitzar inferències entre les agendes d'actors amb diferent naturalesa.

Paraules clau: agenda dels mitjans; agenda política; agenda-setting; anàlisi composicional (CODA); anàlisi de contingut; biplot; comunicació política; grups de mitjans; intermèdia agenda-setting.

RESUMEN

Desde que a inicios de la década de los años setenta los investigadores Maxwell McCombs y Donald Shaw publicaran el trabajo seminal de Chapel Hill sobre la teoría de la *agenda-setting* (AS), sus académicos han abordado, fundamentalmente, las investigaciones mediante dos herramientas metodológicas: una primera fase de análisis de contenido, empleada para estudiar la cobertura noticiosa y, por ende, la prominencia o saliencia de determinados temas o atributos en la agenda; y un segundo estudio de naturaleza estadística, basado en la verificación del nivel de correlación existente entre los temas, sus emisores o el global de las distintas agendas. El análisis de los contenidos generalmente se ha enfocado en la importancia relativa o comparativa de algunos temas sobre otros. Se supone que algunos medios o actores sociales están más ocupados que otros en determinados temas, lo que ha llevado a un estudio general del volumen relativo de información, en detrimento del análisis detallado del contenido. Tales diferencias (o similitudes) se han evaluado tradicionalmente a partir de la comparación de las frecuencias de sus contenidos principales, que, por medio de las correlaciones de Spearman entre los emisores, han fomentado un análisis sobre el ordenamiento jerárquico, despreciando las diferencias relativas o absolutas y, por lo tanto, cualquier otra información.

A la vista de esta necesidad, y para resolver estos procedimientos cuando el interés reside en la importancia relativa de las partes de un todo, la tesis aborda el *análisis de Datos Composicionales* (CoDa), fundamentado por Aitchinson en 1982, junto con la representación gráfica a través de biplots, impulsada por Gabriel en 1971, para el estudio y mapeo de la teoría de la AS. El interés en CoDa reside en la proporción de cada parte o componente, ya que las cantidades absolutas son irrelevantes y sólo exponen el tamaño de la muestra. Un problema muy similar en

todos los aspectos al que se establece en el estudio de la AS, donde los datos absolutos son irrelevantes y en su mayoría apuntan sobre la temática del contenido, la intencionalidad del mismo, la popularidad del emisor, etc. En esta línea, sólo las proporciones de cada categoría de contenido o el tamaño relativo de un tipo de contenido sobre otro, son verdaderamente informativos.

De acuerdo con estas premisas, la presente tesis doctoral se estructura en cinco artículos que distinguen la originalidad del estudio en presentar el CoDa-biplot como herramienta para el mapeo y estudio composicional de la teoría de la AS. Sirviéndose del período de las Elecciones Generales en España de 2015, la tesis se presenta como una unidad temática que aborda, a lo largo de cinco publicaciones, el mapeo y estudio composicional de la teoría de la AS de la opinión sobre política en el sistema mediático español (agenda de los medios), así como de las comunicaciones de carácter político en Twitter de los principales partidos españoles (agenda política). Asimismo, el estudio agregado de ambas agendas (la de los medios y la política) nos permite abordar el análisis y representación de la intermedia AS.

En esta línea, el primer artículo desarrolla la aproximación más elemental al estudio de la AS, a partir del análisis de la opinión sobre política publicada por los principales rotativos de información generalista de la prensa escrita española. Este primer estudio nos permitió aprehender los temas sobre política que suscitaron una mayor atención, para el posterior estudio de la AS en el terreno composicional. Así, la segunda publicación presenta y desarrolla el CoDa-biplot como una aproximación metodológica innovadora para visualizar y analizar la teoría de la AS. Para ilustrar la viabilidad de las herramientas composicionales, desarrollamos un análisis de contenido de los artículos de opinión sobre política

del primer artículo, obteniendo la primera representación composicional del AS, en este caso de la agenda de los rotativos.

El tercer y cuarto artículo representan una aplicación de la herramienta CoDa-biplot al estudio de la agenda política y de medios, respectivamente. Concretamente, la tercera publicación desarrolla un análisis de contenido de los mensajes publicados en las cuentas oficiales de Twitter de los principales partidos políticos, obteniendo la primera representación composicional de la agenda política. Para el cuarto artículo, recogemos los datos sobre el estudio composicional del AS en la prensa escrita y las complementamos con un nuevo análisis de contenido sobre los principales programas de opinión política de la radio y televisión española, completando así la representación composicional de la agenda mediática de los principales grupos de medios españoles.

Finalmente, el quinto artículo utiliza los datos agregados del análisis de contenido de la agenda de los medios y de la agenda política de las anteriores publicaciones, para inferir, a partir de la herramienta del CoDa-biplot, la intermedia AS. El estudio completa los resultados de la tesis en su aportación al mapeo de los procesos de intermediación de las agendas de distintos actores, a la vez que permite realizar inferencias entre las agendas de actores con distinta naturaleza.

Palabras clave: agenda de los medios; agenda política; agenda-setting; análisis composicional (CoDa); análisis de contenido; biplot; comunicación política; grupos de medios; intermedia agenda-setting.

RESUMO

Desde que no início da década de setenta do século pasado os investigadores Maxwell McCombs e Donald Shaw publicaram o trabalho inicial de Chapel Hill sobre a teoria da *agenda-setting* (AS), os seus académicos abordaram, fundamentalmente, as investigações segundo duas ferramentas metodológicas: uma primeira fase de análise de conteúdos, empregue para estudar a cobertura noticiosa, e, consequentemente, a proeminência ou relevância de determinados temas ou assunto na agenda; e uma segunda, de natureza estatística, baseada no nível de correlação existente entre os temas, os seus emissores e a globalidade das agendas. A análise dos conteúdos, geralmente, foca-se na importância relativa ou comparativa de alguns temas sobre os outros. Supõe-se que alguns medias ou atores sociais estão mais ocupados que outros com determinados temas, conduzindo a um estudo geral do volume relativo à informação, em detrimento de uma análise crítica do conteúdo. Tais diferenças (ou similitudes) avaliam-se tradicionalmente apartir da comparação das frequências dos seus conteúdos principais, que, por meio das correlações de Spearman entre os emissores, fomentam uma análise sobre o ordenamento hierárquico, desvalorizando as diferenças relativas ou absolutas e, portanto, qualquer outra informação.

Face a esta necessidade, e para resolver estes procedimentos quando o interesse reside na importância relativa das partes, a tese aborda a *análise de Dados Composicionais* (CoDa), fundamentada por Aitchinson em 1982, com a representação gráfica através de biplot, impulsionada por Gabriel em 1971, para o estudo e mapeamento da teoria da AS. O Interesse no CoDa reside na proporção de cada parte componente, já que as quantidades absolutas são irrelevantes e só apresentam a dimensão da amostra. Esta problemática é semelhante ao estudo da AS, onde os dados absolutos são irrelevantes e na sua maioria apontam sobre a

temática do conteúdo, a intencionalidade do mesmo, a popularidade do emissor, etc. Nesta linha, só são verdadeiramente informativas as proporções de cada categoria do conteúdo ou o tamanho relativo de um tipo de conteúdo sobre o outro.

De acordo com estas premissas, a presente tese doutoral estrutura-se em cinco capítulos que sublinham a originalidade do estudo ao apresentar o CoDa-biplot como ferramenta para o mapeamento e estudo composicional da teoria da AS. Servindo-se do período das Eleições Gerais em Espanha do 2015, a tese apresenta-se como unidade temática que aborda ao longo de cinco publicações, o mapeamento e estudo composicional da teoria da AS da opinião sobre política no sistema mediático espanhol (agenda dos media), assim como as comunicações de carácter político no Twitter dos principais partidos espanhóis (agenda política). O estudo agregado de ambas agendas (dos media e da política) permite-nos abordar a análise e representação da intermédia AS.

Este primeiro estudo permite-nos apreender os temas políticos que suscitaram uma maior atenção, para o estudo posterior da AS no campo composicional. Assim, o segundo capítulo apresenta e desenvolve o CoDa-biplot como uma aproximação metodológica inovadora para visualizar e analisar a teoria da AS. Para ilustrar a viabilidade das ferramentas composicionais, desenvolvemos uma análise de conteúdo dos artigos de opinião sobre a política do primeiro artigo, obtendo assim, a primeira representação composicional da AS, no caso da agenda dos jornais.

O terceiro e quarto capítulos representam uma aplicação da ferramenta CoDa-biplot ao estudo da agenda política e dos media, respectivamente. Concretamente o terceiro capítulo desenvolve uma análise de conteúdos das mensagens publicadas nas contas oficiais do Twitter dos partidos políticos, obtendo a

primeira representação composicional da agenda política. No quarto capítulo, recolhemos os dados sobre o estudo composicional da AS na imprensa escrita, complementados com uma nova análise de conteúdos sobre os principais programas de opinião sobre política na rádio e na televisão espanholas, completando assim a representação composicional da agenda mediática dos principais grupos de medias espanhóis.

No último artigo, o quinto da tese, utilizamos os dados agregados da análise de conteúdos da agenda dos media e da agenda política das anteriores publicações, para inferir, a partir da ferramenta do CoDa-biplot, a intermedia AS. O estudo completa os resultados da tese na sua contribuição ao mapeamento dos processos de intermediação das agendas dos distintos atores, uma vez que permite realizar inferências entre as agendas de atores com natureza diversificadas ou diferentes.

Palavras chaves: agenda dos media; agenda política; agenda-setting; agenda-setting intermédia; análise composicional (CoDa); análise de conteúdos; biplot; comunicação política; grupos de meios.

ABSTRACT

Since researchers Maxwell McCombs and Donald Shaw published the seminal work of Chapel Hill on agenda-setting theory (AS) at the beginning of the 1970s, its academics have developed their investigations using two methodological tools: a first phase of content analysis, used to study the news coverage and, therefore, the prominence or salience of certain topics or attributes in the agenda; and a second study of statistical nature, based on the verification of the level of correlation between the issues, their senders or the global of the different agendas. Content analysis has generally focused on the relative or comparative importance of some topics over others. It is assumed that some media or social actors are busier than others in certain topics, which has led to a general study of the relative volume of information, to the detriment of the detailed content analysis. Such differences (or similarities) have been traditionally evaluated from the comparison of the frequencies of their main contents, which, by means of Spearman correlations between the senders, have fostered an analysis on the hierarchical order, disregarding the relative or absolute and, therefore, any other information.

In view of this need, and to resolve these procedures when the interest lies in the relative importance of the parts of a whole, the thesis deals with the analysis of Compositional Data (CoDa), founded by Aitchinson in 1982, along with the graphic representation through biplots, promoted by Gabriel in 1971, for the study and mapping of the AS theory. The interest in CoDa lies in the proportion of each part or component, since the absolute quantities are irrelevant and only expose the sample size. A very similar problem in all aspects that is established in the study of the AS, where the absolute data are irrelevant and mostly point to the content, the intent of the content, the popularity of the issuer, etc. In this line, only the

proportions of each content category or the relative size of one type of content over another are truly informative.

According to these premises, the present doctoral thesis is structured in five articles that distinguish the originality of the study in presenting the CoDa-biplot as a tool for mapping and studying the AS theory. Using the period of the 2015 General Elections in Spain, the thesis is presented as a thematic unit that addresses, throughout five publications, the mapping and compositional study of the theory of AS of opinion on politics in the Spanish media system (media agenda), as well as political communications on Twitter of the main Spanish parties (political agenda). Likewise, the aggregate study of both agendas (the media and politics) allows us to approach the analysis and representation of the intermediate AS.

In this line, the first article develops the most elementary approach to the study of the AS, based on the analysis of the opinion on politics published by the main general-information newspapers of the Spanish written press. This first study allowed us to apprehend the policy issues that provoked a greater attention, for the later study of the AS in the compositional field. Thus, the second publication presents and develops the CoDa-biplot as an innovative methodological approach to visualize and analyze the theory of AS. To illustrate the viability of the compositional tools, we developed a content analysis of the articles of opinion on politics of the first article, obtaining the first compositional representation of the AS, in this case from the newspapers agenda.

The third and fourth articles represent an application of the CoDa-biplot tool to the study of the political and media agenda, respectively. Specifically, the third publication develops an analysis of the content of the messages published in the

official Twitter accounts of the main political parties, obtaining the first compositional representation of the political agenda. For the fourth article, we collect the data on the compositional study of AS in the written press and complement it with a new content analysis on the main political opinion programs of Spanish radio and television, thus completing the compositional representation of the media agenda of the main Spanish media groups.

Finally, the fifth article uses the aggregated data from the content analysis of the media agenda and the political agenda of the previous publications, to infer, from the CoDa-biplot tool, the intermediate AS. The study completes the results of the thesis in its contribution to the mapping of the intermediation processes of the agendas of different actors, while allowing inferences between the agendas of actors with different nature.

Keywords: media agenda; political agenda; agenda-setting; compositional analysis (CoDa); content analysis; biplot; political communication; media groups; intermediate agenda-setting.

1. INTRODUCCIÓN GENERAL

La presente tesis doctoral se enmarca dentro del campo de la *Mass Communication Research* (investigación en comunicación de masas), desde la que tradicionalmente los investigadores sociales han procurado explicar la influencia de los medios masivos de comunicación (MMC) en la opinión pública. Concretamente, la tesis se centra en el estudio de la teoría de la agenda-setting (AS), una de las teorías más definitorias del campo científico, y de forma más específica en los procesos metodológicos de estudio y representación de la misma.

La teoría de la AS conmemora más de medio siglo de investigaciones académicas. El estudio sobre las elecciones presidenciales de los Estados Unidos en 1968, disputada entre el candidato republicano Richard Nixon y el demócrata Hubert Humphrey, sirvió de contexto a los investigadores Maxwell McCombs y Donald Shaw para formular la hipótesis que 'los MMC definen la agenda de la campaña política, influyendo en la saliencia de las actitudes hacia los asuntos políticos' (McCombs y Shaw, 1972: 177). El trabajo seminal de los investigadores estadounidenses, popularizado con el nombre de Chapel Hill (la ciudad de Carolina del Norte donde se desarrolló el estudio de caso), significó una confrontación directa con la ley de las mínimas consecuencias enunciada por Paul Lazarsfeld (1944). Si en la década de los años cuarenta la corriente de Lazarsfeld sostenía que los MMC eran incapaces de generar cambios en el comportamiento de los votantes, casi treinta años después McCombs y Shaw probaron que las noticias difundidas por los MMC propiciaban efectos cognitivos en la opinión pública.

La premisa que estructuró el trabajo de Chapel Hill encuentra sus raíces en la obra *Public Opinion* (1922) del periodista y escritor norteamericano Walter Lippmann,

considerado el padre intelectual de la teoría de la AS (McCombs, 2006: 26). En el primer capítulo, titulado *The world outside and the pictures in our heads*, Lippmann desarrolla la tesis que los MMC definen el mapa cognitivo de la sociedad sobre su experiencia con el mundo en el que viven, generando un *pseudo-entorno informativo* creado por las noticias, con independencia de la realidad de los hechos. Concretamente, Lippmann utiliza las primeras líneas de la obra para describir la situación paradigmática de una isla habitada por colonos ingleses, franceses y alemanes, que, por su situación de aislamiento con el viejo continente en el verano del inicio de la Primera Guerra Mundial, convivieron durante seis semanas siendo amigos, cuando realmente habían pasado a ser enemigos. No fue hasta mediados de septiembre, con la llegada a puerto del correo inglés, que los colonos insulares descubrieron que el mundo conocido por ellos no se ajustaba al mundo como necesitaban conocer. La imagen de ese mundo en la mente de los isleños, contrapuesta por las noticias llegadas a finales del verano, evidenció cuán de indirectamente conocían el contexto en el que, no obstante, vivían.

Los hallazgos sobre la capacidad que los MMC tenían para generar una influencia poderosa sobre la opinión pública, impulsó a finales de 1920 las investigaciones sobre los efectos que la propaganda ostentaba para fomentar la participación ciudadana en la Primera Guerra Mundial. Harold Lasswell (1927), desde una concepción conductista, estableció en el libro *Propaganda Techniques in the World War* que los MMC eran generadores de un estímulo intencional que buscaba persuadir a una masa pasiva y vulnerable desde un emisor todopoderoso, dando origen al modelo de la 'aguja hipodérmica' o 'bala mágica'. Un modelo que se vería altamente cuestionado por las posteriores investigaciones, que en 1960 llevaron a Lazarsfeld y a su discípulo Joseph Klapper a dar forma definitiva a la ley de las mínimas consecuencias, desestimando con rotundidad los preceptos

vigentes hasta el momento y reforzando la actitud predispuesta y auto-selectiva del público (Klapper, 1957). Desde esta perspectiva, los MMC dejan de ser considerados entes omnipotentes y se reemprende la tesis de Lazarsfeld, donde la exposición y la percepción selectiva se deriva de un 'nexo de factores e influencias mediadoras' (Klapper, 1960: 40), que a su vez 'cristaliza y refuerza más que convierte' (Berelson et al., 1954: 248).

Con todo, los postulados de la escuela de las mínimas consecuencias colisionaron con cuestionamientos que advertían nuevas inconsistencias, especialmente vinculadas a la dimensión cognitiva. Es en este contexto que Benard Cohen (1963) retomó las tesis de Lippmann acerca de la importancia de los MMC como nexos entre la porción de realidad que podemos asumir y el complejo e inalcanzable mundo exterior, pronunciando la máxima que 'los MMC pueden no ser exitosos al decirnos qué pensar, pero sí al indicarnos sobre qué pensar'. Este cambio de paradigma que supuso el impase de una investigación centrada en la percepción selectiva a la consideración de los efectos cognitivos, asentó la hipótesis sobre el establecimiento de la agenda pública por parte de los medios.

Sirviéndose del axioma de Cohen, la investigación de Chapel Hill constató que 'aquellos temas de los asuntos públicos que son prominentes en las noticias se vuelven prominentes entre el público' (McCombs y Shaw, 1972: 177), fundamentando –en un primer nivel– la idea que existe una fuerte correlación entre el énfasis que los MMC otorgan a ciertas cuestiones y la importancia que las audiencias les atribuyen (Cohen, 1963; McCombs y Shaw, 1972). Así, las inquietudes de los teóricos de la AS se fundamentaron desde sus inicios en probar que los MMC no solamente son transmisores de la información, sino que ejercen como filtro de aquellos temas que integrarán la agenda y, a su vez, definirán la

atención que se establecerá sobre un tema concreto en un espacio de tiempo determinado.

En el transcurso de este medio siglo desde que McCombs y Shaw efectuaran las mediciones de Chapel Hill, la teoría de la AS ha evolucionado y ampliado sustancialmente sus fronteras empíricas. Especialmente exigida por un sistema mediático cada vez más vasto y complejo, el ejercicio de fijación de la agenda sigue siendo un cometido esencialmente reservado a los MMC, que siguen desempeñándose como vínculo indispensable entre las vivencias individuales de los ciudadanos y los acontecimientos del mundo global. Esta limitación de la sociedad para imponer la realidad a un control exhaustivo y permanente, ha propiciado que los MMC se conviertan en valedores del relato sobre el mundo que nos rodea, en un *acting* que dirime los acontecimientos que se incluyen u omiten de la narrativa mediática, según el grado de importancia que se les otorgue.

Con este ejercicio de jerarquización de los temas que son considerados relevantes a ojos del sistema mediático y para las preocupaciones de la ciudadanía, se pretende lograr que ésta focalice en ellos su atención, pensamiento y acciones, confiriendo así el primer nivel en la formación de la opinión pública, donde la gente percibe que los acontecimientos que más cobertura reciben son también los más importantes (Igartua y Humanes, 2004: 244). En esta función de tematizar la noticia (Luhmann, 1973), es decir, de agendar un asunto en el orden del día de la atención pública, dándole la importancia adecuada, subrayando su centralidad y su significatividad (Wolf, 1991), los MMC, sea o no manifiesto el mecanismo por el cual se determina la construcción de la agenda, se han postulado como unos instrumentos extremadamente poderosos en la configuración de la mentalidad dominante en las sociedades contemporáneas.

Los estudios de la AS dentro del fenómeno de la comunicación de masas, se han abordado desde diversas perspectivas y en los cinco continentes. Desde esta diversidad de modelos de estudio, McCombs (2006: 71) presentó en 1981, en el marco del congreso anual de la Asociación de Comunicación Internacional en Acapulco (México), una clasificación de los distintos tipos de relación entre la cobertura mediática de los temas y las agendas de distintos actores sociales (medios, política y público), denominada *Tipología de Acapulco*. Esta tipología se define por dos dimensiones bajo un estudio dicotómico y, por ende, presenta cuatro perspectivas determinadas por: a) el *foco de atención*, que puede englobar el conjunto de temas que definen la agenda o bien limitarse a un único tema – frecuentemente relacionado con el *Most Important Problem* (problema más importante, [MIP]) que afronta la nación; y b) la *medición de la relevancia pública* de los temas de la agenda, definida por mediciones agregadas que describen a una población, frente a las mediciones que describen respuestas individuales. Por consiguiente, el estudio de la AS toma especial relevancia en esta fase, ya que define el concepto de la intermedia AS, es decir, establece como marco de análisis la interrelación de las agendas presentadas por distintos agentes sociales (principalmente focalizado en la agenda de los medios, la agenda pública y/o la agenda política).

Desde esta taxonomía de las perspectivas de estudio de la AS, las investigaciones se han abordado, fundamentalmente, mediante dos herramientas metodológicas. Una primera fase de análisis de contenido, empleada para estudiar la cobertura noticiosa y, por ende, la prominencia o saliencia de determinados temas o atributos en la agenda; y un segundo estudio de naturaleza estadística, basado en la verificación del nivel de correlación existente entre los temas, sus emisores o el global de las distintas agendas. En esta línea, Gonzenbach y McGavin (1997) estructuraron los principales abordajes metodológicos teniendo en cuenta las

singularidades que han suscitado los más de cuatrocientos trabajos desarrollados entorno a la teoría de la AS (McCombs, 2006: 80), sistematizando los procedimientos metodológicos en dos modelos:

a) Modelo transversal: Se fundamenta en el estudio de la relación entre unidades de análisis en un espacio de tiempo limitado y concretizado. En esencia, durante ese espacio de tiempo se selecciona una variable independiente (p.ej. el contenido en los medios) y se cruza con una variable dependiente (p.ej. la opinión de la audiencia de esos medios sobre los temas más importantes del momento). Posteriormente se agregan y ordenan según la importancia atribuida en las mediciones por sendos actores, para finalmente poder analizar los datos mediante la tradicional correlación por rangos de Spearman. El signo del coeficiente resultante definirá el grado de correlación entre ambos actores y, en consecuencia, entre ambas agendas (p.ej., Conway *et al.,* 2015; McCombs y Shaw, 1972; Ragas y Kiousis, 2010; Weimann-Saks *et al.,* 2016).

b) Modelos longitudinales: Está formado por dos procedimientos diferenciados de estudio, los de diseño de panel y los de series temporales, por bien que ambos modelos siguen empleando una fase previa de estudio correlacional. La fundamentación del modelo longitudinal, en contraposición al transversal, está focalizado en las diferencias o cambios experimentados por una o más variables a través de dos o más puntos en el tiempo. La diferencia entre sendos abordajes reside en la unidad de análisis empleada, ya que en el diseño de panel es el individuo quien, de forma general, es encuestado en distintos puntos en el tiempo; a diferencia de las series temporales, donde generalmente la unidad de análisis es una medida agregada como la frecuencia de ciertas noticias, porcentajes de población

sobre el MIP de la nación, un dato de la realidad como el desempleo, etc. (p.ej., Cui y Wu, 2017: 11; Lim, 2011: 177; Luo, 2014: 1303; Min, 2004: 200; Sweetser *et al.,* 2008: 208; Tedesco, 2006: 196).

En este sentido, los académicos del estudio de la AS han sustentado generalmente sus investigaciones en base a la selección de uno de los modelos metodológicos de investigación descritos, al servicio de una de las cuatro perspectivas de investigación definidas por McCombs desde la *Tipología de Acapulco*. Por lo general, la contraposición de un análisis de contenido previo sobre los asuntos de dos o más actores sociales (medios, política y/o público), al servicio de un estudio estadístico básico de carácter correlacional, ha definido el grado de importancia de unos temas sobre otros y, en consecuencia, el establecimiento de una agenda, tema o actor dominante, sobre otro relegado.

Como hemos visto hasta ahora, en la naturaleza de la teoría de la AS el análisis de los contenidos generalmente se enfoca en la importancia relativa o comparativa de algunos contenidos sobre otros. Se supone que algunos medios o actores sociales están más ocupados que otros en determinados temas, lo que lleva a un estudio general del volumen relativo de información sobre los temas, en detrimento del análisis detallado del contenido. En la mayoría de los casos se evidencia en la formulación de hipótesis y preguntas de investigación, expresadas en términos comparativos, relativos o competitivos (p.ej., Jungherr *et al.*, 2016: 54; Meraz, 2009: 687; Frederick *et al.*, 2015: 317; Luo, 2014: 1293; Cui y Wu, 2017: 2; Rogstad, 2016: 145; Weimann-Saks *et al.*, 2016: 730; Ragas y Kiousis, 2010: 567; Sweetser *et al.*, 2008: 204; Guo *et al.*, 2015: 349; Naudé y Froneman, 2003: 87; Besova y Cooley, 2009: 225). Tales diferencias (o similitudes) se han evaluado tradicionalmente a partir de la comparación de las frecuencias de sus contenidos principales, que, por medio de las correlaciones de Spearman entre los

emisores, establecen un ordenamiento jerárquico que no tiene en cuenta las diferencias relativas o absolutas y, por lo tanto, desprecia cualquier otra información.

Para resolver estos procedimientos cuando el interés reside en la importancia relativa de las partes de un todo, el estadístico escocés John Aitchinson presentó el trabajo seminal *The statistical analysis of compositional data* (1982, 1986), sobre composiciones químicas y geológicas. Así, se inició la tradición del *análisis de Datos Composicionales* (CoDa) en el que sólo interesa la proporción de cada parte o componente, ya que las cantidades absolutas son irrelevantes y sólo exponen el tamaño de la muestra química o de suelo (p.ej., Buccianti *et al.*, 2006). Tal es su trayectoria que en la actualidad el análisis CoDa abarca casi todas las ciencias exactas y ha comenzado a utilizarse en varios campos de las ciencias sociales, como la educación (Batista-Foguet *et al.*, 2015), la economía (Fry, 2011), el marketing (Vives-Mestres *et al*, 2016), la contabilidad (Linares *et al.*, 2018), el turismo (Ferrer Rosell y Coenders, 2016), los valores (van Eijnatten *et al.,* 2015), las redes sociales (Kogovšek *et al.,* 2013), el uso del tiempo (Martín-Fernández *et al*., 2015a), y estudios electorales (Egozcue y Pawlowsky-Glahn, 2011; Liscano Fierro y Ortiz Rico, 2017).

En el análisis de contenido derivado del estudio de la AS que se establece entre un conjunto de actores y temas, se propone un problema similar en todos los aspectos al planteamiento del análisis químico y geológico. Los datos absolutos son irrelevantes y en su mayoría apuntan sobre la popularidad global del emisor o del contenido. En esta línea, sólo las proporciones de cada categoría de contenido o el tamaño relativo de un tipo de contenido sobre otro, son verdaderamente informativos.

A la vista de esta necesidad, la presente tesis doctoral ha estructurado su investigación en cinco artículos que aplican el CoDa-biplot como herramienta para la representación y estudio composicional de la teoría de la AS. Sirviéndose del período de las Elecciones Generales en España de 2015, la tesis se presenta como una unidad temática que aborda, a lo largo de las cinco publicaciones, el mapeo y estudio composicional de la teoría de la AS de la opinión sobre política en el sistema mediático español (agenda de los medios), así como de las comunicaciones de carácter político en Twitter de los principales partidos españoles (agenda política). Asimismo, el estudio agregado de ambas agendas (la de los medios y la política) nos permite abordar, como veremos más adelante en el *Artículo V*, el análisis y representación de la intermedia AS.

El **Artículo I** representa la aproximación más elemental al estudio de la AS a partir del análisis de la opinión sobre política, publicada por los principales rotativos de información generalista de la prensa escrita española (*El País*, *El Mundo*, *La Vanguardia*, *Abc* y *La Razón*). Los periódicos fueron seleccionados siguiendo los barómetros del 'Estudio General de Medios' (EGM) –en el período de octubre de 2015 a mayo de 2016– y de la plataforma 'Oficina de Justificación de la Difusión' (OJD). Asimismo, se tomaron como referencia aquellos cinco primeros medios impresos de información generalista y con cobertura integrada en todo el Estado español (coincidentes en ambos barómetros), que a su vez confieren 'un arco, que va desde *El País* hasta *Abc*, que prácticamente abarca todas las opciones ideológicas con representación política del país' (López García 2004: 15).

Siguiendo las recomendaciones de McCombs (2006) –que apunta a los artículos de opinión de la prensa escrita como soportes viables para conocer la agenda de los medios– la investigación se desarrolló desde un escenario metodológico

cuantitativo y de análisis de contenido (Krippendorff, 2004), en el período de los quince días anteriores y posteriores a la cita electoral del 20 de diciembre de 2015 (20D). Posteriormente, los datos se agregaron en un ejercicio estadístico básico y característico en el estudio de la AS, alcanzando una visión representativa de la opinión sobre política en el debate mediático del período electoral.

Este primer artículo permitió aprehender los temas sobre política que suscitaron una mayor atención entre los opinantes de la prensa escrita española de referencia. Asimismo, la labor de catalogación de los más de 600 artículos del universo temático de la opinión sobre política, confirió un marco de referencia esencial para el posterior estudio de la AS en el terreno composicional del CoDa-biplot.

En suma, este segundo artículo toma el universo digital de construcción de la agenda política en el contexto electoral del 20D, para presentar la herramienta del CoDa-biplot como una alternativa metodológica para el estudio proporcional de la teoría de la AS. Este análisis demuestra la solidez metodológica del enfoque, al tiempo que proporciona una visión novedosa sobre el mapeo de la teoría. Asimismo, la representación composicional contribuye a visualizar dos fenómenos estrechamente relacionados con la teoría de la AS, como son el *priming* (basado en la activación asociativa entre un grupo de cuestiones que son más influyentes que otros) y la *spiral of silence* (aquellos temas que se omiten en la AS derivados del propio proceso de jerarquización).

En el **Artículo II,** y a la vista de la necesidad de un estudio que priorice las proporciones relativas de cada categoría, contenido y/o emisor, presentamos el CoDa-biplot como una aproximación metodológica innovadora para visualizar y analizar la teoría de la AS. Para ilustrar la viabilidad de las herramientas composicionales, utilizamos la investigación desarrollada en el *Artículo I* sobre el

estudio elemental de la AS en la prensa escrita, aplicando, en este caso, las herramientas composicionales del CoDa-biplot una vez probada su viabilidad metodológica. Si bien el universo en estudio responde exactamente a lo descrito en el primer artículo, los resultados y conclusiones que alcanza este segundo artículo –especialmente en contraste con el primero– son extremadamente reveladoras sobre las potencialidades del estudio composicional aplicado a las investigaciones de la AS.

Más allá de visualizar las limitaciones del análisis correlacional de máximos y mínimos, en contraposición con el método composicional, la observación contrastada entre sendos artículos revela una de las constataciones más simbólicas que presenta la tesis: las herramientas composicionales del CoDa-biplot en el estudio de la AS no solamente demuestran su viabilidad, sino que contribuyen a entender con más detalle esa influencia de los MMC en la saliencia de las actitudes de la sociedad hacia los asuntos públicos.

El **Artículo III** desarrolla una representación composicional de la AS política a partir del análisis de contenido de los mensajes publicados en las cuentas oficiales de Twitter por parte de los principales partidos políticos españoles (*Partido Popular*, *Partido Socialista Obrero Español*, *Podemos*, *Ciudadanos* e *Izquierda Unidad*), y dentro del período electoral que centra el estudio de caso del 20D.

Como hemos comentado anteriormente, varios estudios teóricos (Luhmann, 1973; Shaw y McCombs, 1977; Lang y Lang, 1966; Dearing y Rogers, 1996; McCombs, 2004; Sábada, 2008) han demostrado que la AS se define desde la jerarquía informativa de los temas que están sujetos al interés de los medios. En este escenario, y especialmente en la última década, la investigación en el campo de la teoría AS se ha centrado eminentemente en el estudio de los medios digitales de

comunicación, como nuevos espacios capaces de influir en el espacio público y de participar en la construcción de la agenda (p.ej., Bruder, 2008; Meraz, 2009; Krane, 2010; Orihuela, 2011; entre otros). Las redes sociales se han convertido en una herramienta esencial para el desarrollo de la vida política, especialmente en procesos electorales (Perlmutter, 2008, Towner y Dulio, 2012). Twitter, de forma singular, se ha erigido como un nuevo espacio político capaz de diseminar información a una audiencia creciente (Conway et al., 2015: 365), siendo una herramienta de referencia para compilar información, conectarse mejor con el público (potenciales votantes) y realizar un seguimiento de las acciones de las fuentes (Parmelee, 2013).

En el **Artículo IV** recogemos los datos sobre el estudio composicional de la AS en la prensa escrita del segundo artículo y los complementamos con un nuevo análisis de contenido. En este sentido, son los programas con opinión sobre política de la radio y televisión española en el período electoral del 20D, los que completan la AS de los medios de los principales grupos de medios.

El articulo analiza los programas con opinión sobre política de las principales radios (*RNE*, *Ser*, *Cope*, *Onda Cero* y *esradio*), las principales cadenas de televisión (*TVE*, *24h*, *Antena 3*, *La Sexta*, *Telecinco* y *Cuatro*), así como los principales rotativos (*El País*, *El Mundo*, *La Vanguardia*, *Abc* y *La Razón*); para posteriormente construir una representación composicional de la AS de los medios a partir de la herramienta estadística del CoDa-biplot.

Los resultados, altamente representativos de la AS de los medios del período en cuanto están fundamentados desde una visión integradora de los principales grupos de medios del país, prueban la utilidad del método composicional en el estudio comparado entre medios de distinta naturaleza e incluso grupos de

medios. Asimismo, cabe destacar la contribución del método en su fase dinámica de períodos de tiempo comparados, en la identificación del volumen y contenido de los temas que marcan la agenda de los opinantes en espacios electorales, así como la visualización, como en el anterior *Artículo II*, de los fenómenos del *priming* y la *spiral of silence*.

El compendio se cierra con el **Artículo V**, que presenta la intermedia AS en el contexto del estudio composicional entre la agenda política resultante del *Artículo III* y la agenda de los medios del *Artículo IV*, siguiendo así el criterio adicionador del compendio y constituyendo la máxima expresión del estudio de la AS.

El articulo utiliza los datos agregados del análisis de contenido de la agenda de los medios (artículos de opinión en la prensa escrita y los programas seleccionados de radio y televisión) y la agenda política (la selección de los tweets de los partidos políticos en estudio), para inferir, a partir de la herramienta del CoDa-biplot, la intermedia AS. El estudio completa los resultados de la tesis en su aportación al mapeo de los procesos de intermediación de las agendas de distintos actores, a la vez que permite realizar inferencias entre las agendas de actores con distinta naturaleza.

Finalmente, cabe apuntar que la presente tesis doctoral está estructurada de la siguiente manera: la sección 2 presenta los objetivos generales y específicos de la tesis. La sección 3 presenta los datos y la metodología composicional del CoDA-biplot. La sección 4 presenta la transcripción de los cinco artículos de la tesis. Seguidamente se dedica el capítulo 5 para la discusión transversal de las cinco publicaciones. Concluye la sección 6, que presenta las conclusiones y limitaciones.

2. OBJETIVOS

Siguiendo lo expuesto anteriormente, en el marco de los procedimientos metodológicos de estudio de la AS, se evidencia la necesidad de una propuesta que priorice el análisis sobre la importancia relativa de las magnitudes. En este sentido, el objetivo principal de esta tesis es proporcionar un marco de estudio composicional de la teoría de la AS a partir de la herramienta del CoDa-biplot, que a su vez posibilite alcanzar el mapeo de la teoría de la AS. Los objetivos específicos de la tesis, explícitos en cada artículo, son los siguientes:

Artículo I. Identificar y construir un contexto de estudio de la teoría de la AS en el marco del proceso electoral del 20 de diciembre de 2015 en España, que permita aprehender los temas sobre política que suscitaron una mayor atención en el contexto mediático.

Artículo II. Estudiar, desarrollar y probar la herramienta del CoDa-biplot como alternativa metodológica para el estudio composicional de la teoría de la AS, desde el estudio de caso sobre la prensa escrita del *Artículo I*. En otras palabras, distinguir bajo un mismo contexto en estudio, las capacidades del método composicional en contraposición con las limitaciones del método correlacional.

Artículo III. Aplicar la herramienta del CoDA-biplot presentada en el *Artículo II*, para alcanzar la representación composicional de la agenda política en el marco de la comunicación online en Twitter de los principales partidos políticos españoles. Asimismo, se plantea el estudio y representación de los efectos del *priming* y la *spiral of silence* para alcanzar su visualización composicional.

Artículo IV. Estudiar y representar, a partir de la herramienta del CoDa-biplot, la AS de los medios propuesta por parte de los principales grupos de medios españoles en el contexto electoral del 20D, y con la finalidad de alcanzar su mapeo composicional.

Artículo V. Estudiar y representar, a partir de las herramientas del CoDa-biplot, la intermedia AS propuesta por la agenda política del Artículo III y la agenda de los medios del Artículo IV en el contexto electoral del 20D, con la finalidad de alcanzar su mapeo composicional.

3. METODOLOGÍA

Este capítulo se estructura en dos apartados, que se refieren a la metodología utilizada en la tesis. De acuerdo con el objetivo principal de la tesis, de corte metodológico, el primer apartado presenta el universo de datos utilizados para el estudio transversal de la AS en el contexto electoral del 20D y, en el segundo, se describe la metodología composicional del CoDa-biplot.

3.1. Datos

Esta tesis doctoral, con el objetivo de proporcionar un marco de estudio composicional para la teoría de la AS a partir de la herramienta del CoDa-biplot, se ha basado en el conjunto de datos recopilados por vía de un análisis de contenido de naturaleza cuantitativa (Berelson, 1952; Krippendorff, 1990; Wimmer et al., 2006), en el período electoral del 20 de diciembre de 2015 en España. Concretamente, se ha optado por recopilar datos de la comunicación en los medios (prensa, radio y televisión) y en la política (desde las cuentas de Twitter oficiales de los principales partidos políticos españoles), con el fin de alcanzar la representación composicional de la AS de los medios, la política y de intermedia AS entre sendas agendas. En esta línea, y siguiendo a McCombs (2006), se ha optado por construir la agenda de los medios desde el análisis de contenido de los espacios de opinión sobre política en los MMC citados anteriormente. A su vez, se utiliza la herramienta de *microbloging* Twitter para analizar la agenda política, una vez constatada su capacidad como instrumento esencial para el desarrollo de la vida política y especialmente de los procesos de campañas electorales (Perlmutter, 2008; Towner y Dulio, 2012). Así, la muestra estudiada responde a las siguientes acotaciones:

- Acotación temporal: El estudio se centra en el periodo de las Elecciones Generales en España de 2015, y más concretamente en los 31 días comprendidos desde el inicio de la campaña electoral el día 4 de diciembre de 2015 hasta el 4 de enero de 2016. Es decir, los quince días anteriores y posteriores a la jornada electoral del 20 de diciembre de 2015. De este modo se obtiene un equilibrio entre el análisis de las fechas que comprenden la campaña electoral y post-electoral, obviando la jornada electoral por la alteración de la programación estándar en los grupos de medios.

- Acotación espacial: En este caso diferenciamos entre los datos recopilados en Twitter para los partidos políticos de los datos compilados de los MMC. En este sentido, y sobre los MMC, seleccionamos aquellos canales de televisión, emisoras de radio y rotativos con cobertura integrada en el conjunto del territorio español, de información generalista (o temática de opinión sobre política) y con espacios de opinión/tertulia sobre política en la escaleta de contenidos de sus programas. Para una mayor fiabilidad en la elección, y con un resultado coincidente, los medios se han seleccionado siguiendo los datos del EGM[1] (octubre de 2015 a mayo de 2016), contrastados con los datos de la plataforma OJD[2] (en el caso de los periódicos) y el estudio de audiencia de *Kantar Media*[3] (para los medios audiovisuales). Asimismo, se han considerado las siguientes premisas: i) En la prensa escrita se han seleccionado todos los diarios de información

---

[1] Datos disponibles en: http://www.aimc.es/a1mc-c0nt3nt/uploads/2016/06/resumegm216.pdf

[2] Datos disponibles en: https://www.ojd.es/buscador/

[3] *Kantar Media* es la división de Gestión de Inversiones de Datos de la multinacional británica WPP (*Wire and Plastic Products*) y uno de los mayores grupos de información y consultoría del mundo: https://www.kantarmedia.com/es El acceso a los datos de audiencia es mediante pago. Con todo, actualmente existen varios portales web que publican diariamente estos datos, como, por ejemplo: http://www.formulatv.com/audiencias/ portal que se utilizó para contrastar los datos de audiencia de los programas muestra de televisión.

generalista y con cobertura integrada en el conjunto del Estado español, es decir, *El País*, *Abc*, *El Mundo*, *La Razón* y *La Vanguardia*. Además, como apuntábamos anteriormente, estos cinco periódicos trazan un arco que iría desde *El País* hasta *Abc*, que prácticamente abarca todas las opciones ideológicas con representación política en España (López García 2004:15); ii) Para los programas de los medios radiofónicos (*RNE*, *Ser*, *Cope*, *Onda Cero* y *esradio*) y televisivos (*TVE*, *24h*, *Antena 3*, *La Sexta*, *Telecinco* y *Cuatro*) se han seleccionado todos aquellos integrados en medios de información generalista de *no pago*, o temáticos de *no pago* de opinión sobre política (como es el caso del canal de televisión *24h*), dando como resultado los siguientes programas: en el contexto televisivo, *Los Desayunos de TVE*, *La Mañana*, *El Debate de la 1*, *La Noche en 24h*, *Espejo Público*, *Al Rojo Vivo*, *La Sexta Noche*, *Más Vale Tarde*, *El Programa de Ana Rosa*, *Las Mañanas de Cuatro* y *Un Tiempo Nuevo*; y en el contexto radiofónico, *La Mañana de RNE*, *24h*, *Hoy por Hoy*, *Hora 25*, *Herrera en Cope*, *La Linterna*, *Más de uno*, *Julia en la Onda*, *La Brújula*, *Es la Mañana*, *Es la tarde de Dieter*, *En Casa de Herrero* y *Sin Complejos*. Cabe apuntar que el canal *13TV* del grupo *Cope* se ha descartado al no poder contrastar sus datos de audiencia por no participar en el informe sobre audiencias de los medios de comunicación españoles.

Para los datos de los partidos políticos en Twitter, recopilamos y confeccionamos una base de datos con el *stream* del conjunto de tweets publicados por las cuentas oficiales de Twitter de los partidos, con circunscripción única en el conjunto del Estado español y con posterior representación parlamentaria: *Partido Popular* [PP], 1650 tweets; *Partido Socialista Obrero Español* [PSOE], 2825 tweets; *Podemos* [Podemos], 7279 tweets; *Ciudadanos* [C's], 2918 tweets; e *Izquierda Unida* [IU], 7673 tweets. Posteriormente, y con el fin de trabajar con una muestra de tweets

representativa y comparable entre los partidos, fijamos una selección aleatoria sistemática de 1000 tweets por partido que asegura una representación proporcional según la fecha de publicación de los tweets. Con ello, estructuramos una base de datos con los 1000 tweets de cada partido (5000 tweets en el total de los cinco partidos) y pasamos a codificar cada tweet.

- Acotación temática: En relación a los MMC, y concretamente para los artículos de la prensa escrita, se han analizado y codificado desde su versión impresa, ya que resulta más fiable poder dirimir aquellos que se integraban en el género de la opinión sobre política por su estructura formal y contenido. En este sentido, y con un único codificador, se han recogido todos los artículos de opinión de las distintas secciones de cada rotativo, excluyendo los editoriales, ya que siguiendo a Marques de Melo (1985) estos, aun cuando se dirigen formalmente a la opinión pública, 'encierran una relación de diálogo con el Estado'. En el contexto de los programas de radio y televisión, con secciones de opinión sobre política, se han codificado desde el portal web de cada programa y desde las respectivas hemerotecas audiovisuales *a la carta*, analizando el completo de cada tertulia/debate.

De acuerdo con dichas acotaciones, recopilamos y confeccionamos una base de datos con el conjunto de artículos de opinión sobre política de los cinco rotativos, así como con el grupo de programas –radiofónicos y televisivos– emitidos por los MMC en estudio. Se codifican un total de 376 espacios de opinión sobre política de los programas muestra de radio y televisión, 655 artículos de opinión sobre política de las cabeceras seleccionadas de la prensa escrita y, como hemos comentado anteriormente, los 5000 tweets correspondientes a una muestra

aleatoria de 1000 tweets de cada partido político. En los tres casos, se recopilan los siguientes datos: fecha de emisión/publicación de la pieza, medio de comunicación o partido, número total de tertulianos (excepto en los artículos de opinión o tweets que solamente se indica el articulista o, en su defecto, el partido político), el género de los participantes (en el caso de las piezas de los medios) y, finalmente, los contenidos tratados (los *issues*). Éste último campo actúa como eje central de los datos compilados para la posterior consecución del objetivo central de la tesis, en tanto que son codificados los *issues* (temas) que, más adelante, construirán la AS para cada escenario analizado. Concretamente, cada pieza estudiada (artículo de opinión en prensa, programa de radio/televisión o tweet de los partidos políticos) se codifica asignando de una (mínimo) a seis (máximo) palabras clave (temas), que sirven para describir la pieza. A la vez, estas palabras clave conforman una base de datos de carácter acumulativo (con un total de 350 entradas, es decir, temas), que asegura la no repetición los *issues* y, por lo tanto, una codificación precisa y unificada. La siguiente *Tabla 1* sintetiza la muestra de grupos, medios y número de piezas analizadas en cada caso:

Tabla 1. Grupos de medios, medios y número de piezas analizadas

GRUPOS	PROPIEDAD DE LOS MEDIOS	TELEVISIONES				RADIOS				PRENSA ESCRITA
RTVE	*TVE, 24H, RNE*: Ministrerio de la Presidéncia y para las Administraciones Territoriales, Gobierno de España.	TVE Los Desayunos de TVE	La mañana	El debate de la 1	24h La noche en 24h	RNE Las mañana de RNE	24h			
		13	18	2**	12	19	16			
PRISA	*SER*: 100% Prisa Radio. *El País*: 100% Prisa Noticias.					SER Hoy por hoy	Hora 25			EL PAÍS
						21	19			66
VOCENTO	*ABC*: 100% Comeresa Prensa.									ABC
										149
UNIDAD EDITORIAL	*El Mundo*: 100% Unidad Editorial, Información General.									El Mundo
										153
COPE	*COPE*: 43% Radio Popular + participado por Conferéncia Episcopal Española (52%) y La Información (5%).					COPE Herrera en COPE	La Linterna			
						18	17			
ATERSMEDIA	*Antena 3 y La Sexta*: 100% Atresmedia. Onda Cero: Uniprex y 100% Atresmedia.	Antena 3 Espejo Público	La Sexta Al rojo vivo	La Sexta noche	Más vale tarde	ONDA CERO Más de uno	Julia en la Onda	La Brújula		
		20	20	4**	20	18	18	17		
PLANETA CORPORACIÓN	*La Razón*: 28% Audiovisual Española 2000 + participado por Planeta Corporación (57%) y Antena 3 Noticias (15%).									La Razón
										149
GRUPO GODÓ	*La Vanguardia*: La Vanguardia Ediciones, 100% participado por Gupo Godó de Comunicación.									La Vanguardia
										138
MEDIASET ESPAÑA	*Telecinco y Cuatro*: 100% Mediaset España Comunicación.	Telecinco El Programa de Ana Rosa	Cuatro Las Mañanas de Cuatro	Un tiempo nuevo						
		18	19	2***						
LIBERTAD DIGITAL	*esradio*: 100% Libertad Digital.					esradio Es la mañana	Es la tarde de Dieter	En Casa de Herrero	Sin Complejos	
						20	18	18	9****	

* Información extraída del estudio de ymedia vizeum (2017): https://www.ymedia.es/es/mapa-de-medios
** Programa semanal
*** Programa semanal cancelado en la segunda quincena de observación
**** Programa bisemanal (en sábado y domingo)

Fuente: *Elaboración propia*

Por su parte, cabe apuntar que la necesidad de comprender con exactitud el contenido de cada pieza (principalmente de los tweets y artículos de opinión en prensa) nos ha llevado a desestimar otros métodos, como puede ser la minería de textos. Si bien en algunos casos se puede asociar un contenido con una(s) determinada(s) palabra(s) clave fácil de detectar por minería de textos (p.ej. terrorismo) en otros no es así (p.ej. constitución, que según el contexto podría referirse a su cumplimiento –en el marco del proceso catalán– o a su reforma). En esta línea, confeccionamos una base de datos con un total de 350 temas (códigos primarios), resultantes de la codificación del conjunto de piezas analizadas de

prensa, radio, televisión y Twitter. Posteriormente, siguiendo el criterio de categorización, agrupamos los códigos por su similitud temática y para simplificar a 36 el universo de temas que conforman la AS del período. Cabe apuntar que en este proceso de codificación/agrupación/categorización, prescindimos de 78 códigos primarios (temas) de los 350 iniciales, ya que no respondían a una identificación temática propiamente de la AS, sino de corte ideológico, de identidad o de otra naturaleza (p.ej. inicialmente se identifican las piezas que se muestran a favor o en contra de un partido político, de un representante político o incluso de publicidad sobre los actos de campaña). Así, pasamos de los 350 temas identificados a trabajar con 272, que posteriormente se agrupan en los 36 temas de estudio de la AS, tal y como muestra la *Tabla 2*:

Tabla 2. Codificación/categorización de los temas de la AS

CÓDIGO PRIMARIO	DESCRIPCIÓN	CÓDIGO AGRUPACIÓN (TEMAS de la AS)	DESCRIPCIÓN
ta35, ta46, ta77, ta131, ta159, ta170, ta300, ta313, ta218, ta212, ta202, ta201, ta186, ta184, ta181, ta180, ta160, ta134, ta315, ta301, ta299, ta297, ta328, ta33, ta322, ta149, ta40, ta222	política de pactos entre partidos, diálogo y formación de gobierno	ca1	pactos y formación de gobierno
ta100, ta14, ta97, ta45, ta244, ta245, ta85, ta231, ta238, ta236, ta224, ta213, ta209, ta208, ta177, ta133, ta112, ta309, ta234, ta62, ta117, ta198	proceso catalán, cuestión territorial, referéndum, unidad de España y formación de gobierno catalán	ca2	proceso catalán
ta165, ta162, ta161, ta164, ta166, ta158, ta157, ta154, ta156, ta343, ta129, ta148, ta55, ta167, ta176, ta172, ta173, ta174, ta179, ta193	lectura sobre los resultados electorales en general y en concreto de los principales partidos, ingobernabilidad, bloqueo institucional	ca3	resultados electorales y bloqueo institucional
ta253, ta257, ta56, ta81, ta91, ta281, ta19, ta18	violencia de género, igualdad de género, paridad	ca4	desigualdad-violencia de
ta316, ta12, ta48, ta103	terrorismo ISIS, Estado Islámico, ETA	ca5	terrorismo
ta54, ta95, ta251, ta8, ta163, ta185, ta312, ta227, ta152, ta344, ta345	corrupción, transparencia	ca6	corrupción
ta4, ta5, ta21	*politainment*, participación de políticos en programas de radio televisión, audiencias	ca7	*politainment*
ta38, ta98, ta115, ta135, ta215, ta278, ta280, ta292, ta319, ta327, ta339, ta53, ta88, ta136, ta310, ta118, ta346	debates electorales en televisión	ca8	debates electorales
ta73, ta2, ta20, ta39, ta265, ta266, ta311, ta275, ta273, ta267, ta248, ta250, ta324, ta86, ta93, ta107, ta142, ta216	economía, austeridad, reducción del déficit, consecuencias de la crisis y sobre los salarios, gestión de impuestos y IVA	ca9	economía y crisis
ta252, ta1, ta262, ta270, ta271, ta26	empleo, prestaciones, autónomos, contratos, emprendedores, reforma laboral	ca10	empleo, prestaciones y reforma laboral
ta246, ta255, ta259, ta10, ta302, ta263	educación, formación profesional, becas, derogación de la LOMCE, acoso escolar, universidades, I+D	ca11	educación y LOMCE
ta22, ta42, ta121, ta124, ta139, ta197, ta243, ta25, ta99, ta106, ta325, ta235	nueva política vs. vieja política, la casta, el cambio político y de gobierno, regeneración política, desafección política	ca12	regeneración política y cambio
ta65, ta247, ta140	pensiones, jubilación, tercera edad, envejecimiento	ca13	pensiones y jubilación
ta217, ta277	vivienda, desahucios	ca14	vivienda y desahucios
ta256, ta261, ta320	sanidad, ley de dependencia, copagos, tarjeta de salud, voto rogado y discapacitados	ca15	sanidad y dependencia
ta285, ta59	separación de poderes, política y justicia	ca16	separación de poderes
ta13, ta122, ta169	publicación de estadísticas, CIS, evolución del voto, ley electoral de los sondeos	ca17	estadísticas y CIS
ta16, ta336	cambio climático, medio ambiente, cumbre de París	ca18	medio ambiente
ta31	constitución y/o reforma constitucional	ca19	reforma constitucional
ta43, ta66, ta189	Casa Real, monarquía	ca20	monarquía
ta44, ta190, ta195	iglesia, religiosidad, discurso del Papa	ca21	Iglesia y religión
ta63, ta279	populismo, Le Pen	ca22	populismo
ta83, ta110, ta194, ta334	ejército español, tropas exteriores, conflictos participados, Afganistán, OTAN	ca23	ejército y tropas exteriores
ta137, ta24	memoria histórica	ca24	memoria histórica
ta274, ta321, ta347	política energética, pobreza energética, precio de la luz, agua, gas	ca25	política energética
ta90, ta52, ta102, ta182, ta229	gobiernos latinoamericanos, elecciones en Argentina y Venezuela, situación política en Brasil	ca26	gobiernos latinoamericanos
ta240	infraestructuras, corredor del mediterráneo, ave	ca27	infraestructuras
ta241, ta276, ta342, ta183, ta147	igualdades y desigualdades sociales, Estado del Bien estar, privatizaciones, derechos sociales, emergencia social, diferencia de clases, oligarquía y mercado libre	ca28	Estado del bien estar y desigualdades sociales
ta6, ta27, ta34, ta55, ta84, ta108, ta109, ta113, ta138, ta145, ta168, ta283, ta284, ta298, ta143, ta68	sobre la campaña electoral, generalidades del inicio de campaña, pegada de carteles, jornada de reflexión, decurso de la jornada electoral, sobre el voto y las formas de voto	ca29	jornada electoral, votación y seguimiento de campaña
ta47	redes sociales, nuevas tecnologías, seguimiento de TT	ca30	nuevas tecnologías
ta32, ta50, ta49, ta57, ta67, ta69, ta76, ta79, ta92, ta111, ta104, ta123, ta126, ta127, ta130, ta141, ta144, ta187, ta188, ta199, ta200, ta203, ta214, ta221, ta223, ta232, ta233, ta237, ta318, ta340	relaciones España-Europa, política europea, conflictos europeos, refugiados, política exterior, política internacional	ca31	política europea e internacional
ta128, ta207, ta348, ta349	sector primario, agricultura, pesca, PAC	ca32	sector primario, agricultura y
ta78, ta210	crisis del liderazgo del PSOE y Pedro Sánchez	ca33	crisis de liderazgo PSOE
ta119, ta220	elecciones al País Vasco	ca34	elecciones País Vasco
ta125	la agresión de un joven a Mariano Rajoy en la campaña electoral	ca35	agresión a Mariano Rajoy
ta337, ta272, ta269, ta264, ta260, ta254, ta219, ta205, ta204, ta196, ta150, ta151, ta114, ta89, ta75, ta268, ta211	Debate sobre conflictos, sucesos o problemáticas sociales (aborto, ley mordaza, derecho de los animales, sobre los funcionarios, derechos de homosexuales, ONG y voluntariado, natalidad, papeles de Salamanca, BCN	ca36	conflictos o sucesos sociales

Fuente: *Elaboración propia*

Esta base de datos, resultante del estudio de los temas en los medios y en el contexto de los partidos políticos en Twitter, se presenta al servicio de cada uno de los cinco artículos que constituyen el compendio. En este sentido, veremos que para cada artículo se confecciona un 'top' de temas acorde a aquellos temas más prominentes. Por ello, los 36 temas aquí presentados acaban reducidos en universos de 'top18', 'top15' o, inclusive, 'top12'. En el siguiente apartado detallaremos los motivos y sus efectos más inmediatos.

3.2. Enfoque tradicional y método composicional CoDa-biplot

Como hemos constatado hasta ahora, el estudio de la AS idealmente se centra en las similitudes entre un grupo de emisores para, según la importancia relativa de los temas que proyectan, determinar qué categorías de contenido contribuyen a sus diferencias. En esta línea, y a modo de ejemplo, la *Tabla 3* muestra datos ficticios en 6 emisores (E1 a E6) y sus 3 frecuencias de contenido principales (C1 a C5). En aras de la simplicidad, evaluamos solo la similitud de E1 con todos los demás emisores. Para todos los efectos, E2 parece idéntico a E1, aunque la forma en que se presentan los datos en términos absolutos hace que sea difícil verlo a primera vista. E3 también parece idéntico a E1. En E4 y E5, las dos primeras categorías son como en E1, pero difieren en el tercer contenido, mientras que no hay nada que indique si uno u otro son más diferentes de E1. E6 tiene los mismos tres temas principales que E1, aunque con diferentes frecuencias. Una cuestión clave que confunde la interpretación de dicha tabla es que los diferentes emisores se comparan sobre la base de un conjunto diferente de temas. En otras palabras, no conocemos las frecuencias de los temas omitidos, que pueden estar justo por debajo de la frecuencia del tercer tema, o pueden tener una frecuencia completamente insustancial.

Tabla 3. Comparación ficticia top3 de 6 emisores en las categorías de contenido C1 a C5 basadas en frecuencia absoluta

	E1	E2	E3	E4	E5	E6
Primero	C1-150	C1-50	C1-150	C1-150	C1-150	C1-185
Segundo	C2-90	C2-30	C2-90	C2-90	C2-90	C3-60
Tercero	C3-60	C3-20	C3-60	C5-60	C4-60	C2-55

Fuente: *Elaboración propia.*

La parte superior de la *Tabla 4* muestra la comparación de los 6 emisores según el conjunto completo de categorías de contenido que aparecen en la lista de los tres primeros de al menos un emisor. De esta forma, nos aseguramos que las comparaciones mutuas entre los remitentes se realicen de forma común. Para facilitar la interpretación, la parte central de la tabla contiene proporciones en lugar de frecuencias absolutas. Algunos autores prefieren utilizar rangos (p.ej. Besova y Cooley, 2009; Cui y Wu, 2017; Lim, 2011; Ragas y Kiousis, 2010), como se muestra en la parte inferior de la tabla.

Tabla 4. Comparación total ficticia de 6 emisores en las categorías de contenido C1 a C5 basadas en frecuencias absolutas (arriba), frecuencias relativas (centro) y rangos (abajo)

	E1	E2	E3	E4	E5	E6
C1	150	50	150	150	150	185
C2	90	30	90	90	90	55
C3	60	20	60	50	50	60
C4	45	15	10	10	60	45
C5	15	5	50	60	10	15
C1	0,417	0,417	0,417	0,417	0,417	0,514
C2	0,250	0,250	0,250	0,250	0,250	0,153
C3	0,167	0,167	0,167	0,139	0,139	0,167
C4	0,125	0,125	0,028	0,028	0,167	0,125
C5	0,042	0,042	0,139	0,167	0,028	0,042
C1	1	1	1	1	1	1
C2	2	2	2	2	2	3
C3	3	3	3	4	4	2
C4	4	4	5	5	3	4
C5	5	5	4	3	5	5

Fuente: *Elaboración propia.*

De la segunda parte de la *Tabla 4* se desprende que el emisor 2 es idéntico al emisor 1. Por el contrario, el emisor 3 es marcadamente diferente. En comparación con el emisor 1, el emisor 3 tiene un aumento de tres veces en C5 (0,139 / 0,042 = 3,33), y en comparación con el emisor 3, el emisor 1 tiene un aumento cuádruple en C4 (0,125 / 0,018 = 4,50).

También resulta evidente que el emisor 4 es más diferente del emisor 1 que el emisor 5. Comparado con el emisor 1, el emisor 4 tiene un aumento cuádruple en C5 (0,167 / 0,042 = 4,00) y comparado con el emisor 4, el emisor 1 multiplica por cuatro en C4 (0,125 / 0,018 = 4,50).

Con respecto al emisor 6, las diferencias con respecto al emisor 1 parecen grandes en términos absolutos, pero no tanto en términos relativos, porque ocurren en categorías de contenido que tienen altas proporciones en ambos remitentes (0,514 / 0,417 = 1,23 y 0,250 / 0,153 = 1,64). Por tanto, si las preguntas de investigación se centran en la importancia relativa de los contenidos, esto debe tenerse debidamente en cuenta al analizar los datos.

Mientras que la segunda parte de la *Tabla 4* puede constituir un foco de análisis sólido y en muchos casos se usan tablas similares (p.ej. Frederick et al., 2015; Luo, 2014; Min, 2004; Naudé y Froneman, 2003; Rogstad, 2016; Rubio-García, 2014), existe una falta general de preocupación sobre cómo las categorías de contenido contribuyen a generar diferencias entre los emisores, ya sean relativas o absolutas. Comúnmente, estas diferencias (o similitudes) se han evaluado por medio de las correlaciones por rangos de Spearman entre los emisores sobre la base de la parte inferior de la *Tabla 4* (p.ej. Conway et al., 2015; Cui y Wu, 2017; Lim, 2011; Luo, 2014; Ragas y Kiousis, 2010; Weimann-Saks et al., 2016) o por medio de otros tipos de correlación por rangos (Min, 2004). Por otro lado, las correlaciones lineales de Pearson (Tedesco, 2005; Sweetser et al., 2008) se centran en las diferencias absolutas en lugar de las relativas, y los temas de consenso pueden actuar como valores atípicos al inflar todas las correlaciones al alza (parte inferior de la *Tabla 5*). A veces se usan las pruebas χ^2 en tablas de contingencia para revelar la existencia de diferencias entre los emisores, pero son incluso menos informativas, ya que no dicen nada sobre el alcance de estas diferencias (p.ej., Frederick *et al.*, 2015; Naudé y Froneman, 2003).

Tabla 5. Correlaciones por rangos de Spearman (arriba) y correlaciones de Pearson (abajo)

	E1	E2	E3	E4	E5	E6
E1	1.000	1.000	.900	.700	.900	.900
E2	1.000	1.000	.900	.700	.900	.900
E3	.900	.900	1.000	.900	.700	.800
E4	.700	.700	.900	1.000	.600	.500
E5	.900	.900	.700	.600	1.000	.700
E6	.900	.900	.800	.500	.700	1.000
E1	1.000	1.000	0.886	0.844	0.984	0.939
E2	1.000	1.000	0.886	0.844	0.984	0.939
E3	0.886	0.886	1.000	0.991	0.807	0.847
E4	0.844	0.844	0.991	1.000	0.770	0.814
E5	0.984	0.984	0.807	0.770	1.000	0.924
E6	0.939	0.939	0.847	0.814	0.924	1.000

Fuente: *Elaboración propia*.

Como vemos, en el análisis de contenido las proporciones de los contenidos suelen ser nucleares en el interés del análisis, puesto que se da por sentado que emisores más activos tienen más contenidos de todo tipo. Por citar un concepto claramente relativo, el indicador *term-frequency-inverse-document-frequency* compara la aparición relativa de un contenido dentro de un documento con la aparición relativa de dicho contenido en todo el conjunto de documentos objeto de estudio (Russell, 2014). Cuanto menos, los distintos contenidos se expresan en porcentajes sobre todos los contenidos de un mismo emisor, a fin de eliminar el efecto tamaño (p.ej., Meraz, 2009; Luo, 2014; Rubio-García, 2014; Frederick et al., 2015; Jungherr et al., 2016).

En este contexto, CoDa ha proporcionado en las últimas tres décadas una caja de herramientas estandarizada para resolver el análisis estadístico cuando las preguntas de investigación se refieren a la importancia relativa de las magnitudes.

Ya han comenzado a surgir programas específicos y fáciles de usar (Van den Boogaart y Tolosana-Delgado, 2013; Palarea-Albaladejo y Martín-Fernández, 2015; Thió-Henestrosa y Martín-Fernández, 2005), así como manuales accesibles (Van den Boogaart y Tolosana-Delgado, 2013; Pawlowsky-Glahn y Buccianti, 2011; Pawlowsky-Glahn *et al.,* 2015). A continuación, ofrecemos un breve resumen del método:

La composición **x** es un vector real positivo:

$$\mathbf{x} = (x_1, x_2, \ldots, x_D) \quad \text{con} \quad x_j > 0 \quad \text{para todo } j = 1, 2, \ldots, D, \tag{1}$$

donde D es el número de componentes, en nuestro caso, categorías de contenido (temas). Con el fin de centrar la importancia relativa de los componentes, se *cierra* o *clausura* **x** a una suma unitaria de modo que después de su clausura, **z** contiene proporciones de cada categoría de contenido.

$$\mathbf{z} = C(\mathbf{x}) = \left(\frac{x_1}{S}, \frac{x_2}{S}, \ldots, \frac{x_D}{S} \right) = (z_1, z_2, \ldots, z_D)$$

$$\text{con } z_j > 0 \quad \text{para todo } j = 1, 2, \ldots, D; \ S = \sum_{j=1}^{D} x_j. \tag{2}$$

A causa de la restricción de suma fija, la mayoría de las herramientas estadísticas clásicas, como la media, la correlación y las distancias quedan, en menor o mayor medida, desprovistas de sentido cuando se aplican a **z.**

Una medida apropiada del centro de una muestra de n composiciones es la media geométrica cerrada. Si g_j es la media geométrica de la muestra del componente z_j para todas las n composiciones, el centro se expresa como $C(g_1, g_2, \ldots, g_D)$.

Las distancias euclidianas entre las composiciones individuales (emisores) también carecen de sentido (Aitchison et al., 2000). La distancia euclidiana

considera que el par de proporciones 0,01 y 0,02 es tan mutuamente distante como 0,11 y 0,12, mientras que en el primer par la diferencia es del 100% y en el segundo menos del 10%.

Transformaciones, asociación y distancia

El enfoque más común de CoDa es expresar un vector original de composición de componentes D en logaritmos de ratios entre los componentes (Aitchison, 1986; Egozcue et al., 2003). Los argumentos principales para log ratios son que constituyen una forma natural de destilar la información sobre el tamaño relativo de los componentes y forman la base para definir la asociación y la distancia de una manera significativa. Las log ratios pueden, por ejemplo, calcularse entre cada parte y la media geométrica de todas, en las llamadas *log ratios centradas*:

$$\ln\left(\frac{z_j}{\sqrt[D]{z_1 z_2 \cdots z_D}}\right) \qquad (3)$$
$$\text{con } j = 1,2,\ldots,D.$$

La *distancia de Aitchison* (Aitchison, 1983) entre las composiciones $\mathbf{z}$ y $\mathbf{z}^*$ de dos emisores considera que la distancia cero corresponde a proporciones de contenido idénticas y que dos emisores están a una mayor distancia mutua cuanto mayor sea la diferencia entre sus log ratios. Las distancias de Aitchison pueden expresarse directamente en términos de log ratios centradas (3) como:

$$d(\mathbf{z},\mathbf{z}^*) = \sqrt{\sum_{j=1}^{D}\left(\ln\left(\frac{z_j}{\sqrt[D]{z_1 z_2 \cdots z_D}}\right) - \ln\left(\frac{z_j^*}{\sqrt[D]{z_1^* z_2^* \cdots z_D^*}}\right)\right)^2} \qquad (4)$$

El uso de log ratios atribuye mayor importancia en las distancias de las diferencias en categorías de contenido con proporciones bajas.

En lo que respecta a las correlaciones, se recomienda prescindir de ellas y substituirlas por el concepto de *proporcionalidad*. Si dos partes se mueven de forma proporcional, su ratio se mantiene constante y el logaritmo de su ratio tiene varianza cero.

(5)

$$\text{Var}(\ln(x_j/x_k))=0$$

La matriz de correlaciones tiende a substituirse por la llamada *matriz de variación*, que contiene dichas varianzas de logaritmos de ratios calculadas para todas las posibles parejas de componentes $j=1,2,…,D$; $k=1,2,…,D$. Igual que la matriz de correlaciones es simétrica. El valor cero, como se ha comentado, implica asociación perfecta directa entre dos componentes. No hay, en cambio, una cota superior que indique asociación perfecta inversa. Valores altos de la varianza indican que los dos componentes no varían proporcionalmente (Egozcue y Pawlowsky-Glahn, 2011).

Reemplazo de ceros

Como es bien sabido, calcular log ratios implica que **z** no puede contener valores cero. Si el vector **z** contiene ceros, deben ser reemplazados antes (Martín-Fernández et al, 2011). Cuando los datos, como en el caso que nos ocupa, son recuentos de frecuencias, el marco común para reemplazar los ceros es el *Bayesiano-multiplicativo* (Martín-Fernández et al., 2015b, Pierotti et al., 2009). En la regla de Bayes-Laplace, los valores cero **z** se sustituyen por:

$$z'_j = \frac{1}{S+D} \text{, para } z_j = 0 \qquad (6)$$

Los valores z_j no nulos se reducen mediante la sustitución llamada multiplicativa para conservar la suma unitaria y las ratios entre los componentes no sustituidos, entre otras propiedades (Martín-Fernández et al., 2003):

$$z'_j = z_j \left(1 - \sum_{z_j=0} z'_j \right), \text{ para } z_j > 0 \qquad (7)$$

Hay que tener en cuenta que los métodos de reemplazo de ceros presuponen que la mayoría de los valores son superiores a cero. Para métodos de tratamiento alternativos de datos con ceros prevalentes véase Greenacre (2011).

El CoDa biplot

De la misma manera que los datos estándar, los datos composicionales requieren de herramientas de visualización para ayudar a los investigadores a interpretar grandes tablas de datos con muchos emisores y muchas categorías de contenido. Con este fin, Aitchison (1983) amplió el conocido procedimiento de *análisis de componentes principales* (ACP) al caso composicional. La extensión se reduce a someter las log ratios (3) a un análisis de componentes principales estándar. Siguiendo el biplot de Gabriel (1971), que representa conjuntamente casos y variables en un ACP, Aitchison y Greenacre (2002) desarrollaran los CoDa biplots.

Existen dos tipos de biplot cuyas interpretaciones difieren y se complementan a lo largo del compendio de publicaciones: el biplot de covarianza (donde los emisores se muestran en coordenadas estándar y categorías de contenido en coordenadas principales) optimiza la representación de la matriz de variación entre categorías de contenido, y el biplot de forma (donde los emisores se muestran en coordenadas principales y categorías de contenido en coordenadas

estándar) optimiza la representación de las distancias de Aitchison entre los emisores. En ambos tipos de biplots, las categorías de contenido aparecen representadas como vectores que emanan de un origen común y los emisores aparecen como puntos. Las principales interpretaciones son la siguientes (ver, para más detalles: Aitchison y Greenacre, 2002; van den Boogaart y Tolosana-Delgado, 2013; Pawlowsky-Glahn et al., 2015):

1. En el biplot de forma, las distancias entre dos puntos son aproximadamente proporcionales a las distancias de Aitchison (4) entre los dos emisores. Los emisores con composiciones de contenido similares aparecen próximos entre ellos.

2. En el biplot de covarianza, las distancias entre los vértices de los vectores de dos categorías de contenido son aproximadamente proporcionales a la raíz cuadrada de la varianza de su correspondiente log ratio por pares. Las categorías de contenido que se comportan proporcionalmente para todos los emisores aparecen muy juntas.

3. En el biplot de forma, las longitudes de los vectores de categorías de contenido son proporcionales a la calidad de la representación de componentes en el espacio bidimensional, cuyo promedio en todos los componentes es la varianza porcentual explicada por las dos primeras dimensiones del ACP.

4. En ambos biplots, la proyección ortogonal (es decir, dejar caer los emisores formando un ángulo de 90 grados sobre la dirección definida por cada vector-tema) de todos los emisores en la dirección definida por un vector, muestra un orden aproximado de la importancia de esa categoría de contenido para todos los emisores. Asimismo, se puede usar para mostrar cómo la categoría de contenido contribuye a diferenciar a los remitentes.

5. En ambos biplots, el origen de todos los vectores es tanto el centro de coordenadas como la media. Una categoría de contenido cercana a este centro en el biplot de covarianza se comporta aproximadamente como el promedio geométrico de todas las categorías de contenido con respecto a los emisores. Del mismo modo, un emisor cercano a este centro en el biplot de forma se comporta aproximadamente como el promedio geométrico de todos los emisores con respecto a los contenidos.

Aitchison y Greenacre (2002) desarrollaron formas más sofisticadas de interpretar el CoDa-biplot, especialmente en términos de correlaciones entre log-ratios. Al igual que en el ACP estándar, el ACP composicional no es solo una herramienta de visualización, sino también una herramienta de simplificación de datos. En este sentido, las coordenadas sobre los primeros componentes principales se pueden usar como datos en análisis estadísticos posteriores.

En suma, el CoDa-biplot permite a los investigadores de la teoría de la AS, tanto para los modelos transversales como longitudinales citados anteriormente, evaluar visualmente:

1. Proximidad entre la AS de pares de emisores. Se pueden cruzar y observar conjuntamente los emisores y *issues* en distintos puntos del tiempo (p.ej. diferentes momentos de observación de los MMC, diferentes campañas electorales, diferentes momentos sobre el MIP, etc.), así como trazar caminos evolutivos.

2. Comportamiento proporcional de pares de categorías de contenido.

3. El orden de los emisores en la importancia relativa de cada categoría de contenido en la AS.

4. PUBLICACIONES

Esta tesis doctoral se presenta como un compendio de cinco artículos, detallados a continuación:

4.1. Publicaciones de la tesis

4.1.1. Artículo I: Blasco-Duatis, M., Fernández García, N., Cunha, I. (2017). Political opinion in the Spanish newspapers. Analysis of the period General Elections campaign in Spain, 2015. *Revista Latina de Comunicación Social*, 72, 349-373. DOI: 10.4185/RLCS-2017-1169en

4.1.2. Artículo II: Blasco-Duatis, M., Coenders, G., Sáez, M. (aceptado). Representación composicional (CoDa) de la agenda-setting de los opinantes sobre política en la prensa escrita española durante las Elecciones Generales de 2015. *Estudios sobre el Mensaje Periodístico*, 24, 2.

4.1.3. Artículo III: Blasco-Duatis, M., Coenders, G., Sáez, M., Fernández García, N., Cunha, I. (en revisión). Mapping the agenda-setting theory, priming and the spiral of silence in Twitter accounts of political parties. *El Profesional de la Información*.

4.1.4. Artículo IV: Blasco-Duatis, M., Sáez, M., Fernández García, N. (2018). Compositional representation (CoDa) of the agenda-setting of the opinion makers on politics in the main Spanish media groups in the 2015 General Elections. *Communication & Society*, 31, 2, 1-24.

4.1.5. Artículo V: Blasco-Duatis, M., Coenders, G., Sáez, M. (2018). Compositional visualization of intermedia agenda setting by the main media groups and political parties in the Spanish 2015 General Elections. *Revista Latina de Comunicación Social*, 73, 264-292. DOI: 10.4185/RLCS-2018-1255-14en

Asimismo, se adjuntan las referencias a cuatro publicaciones más, que si bien no se integran formalmente en la memoria de tesis han sido resultado del proceso de investigación de doctorado:

4.2. Otras publicaciones fuera de la tesis

- **Blasco-Duatis, M.** (2017). *Estética de la posverdad: la mediatización del algoritmo*. En D. Ivoskus, M. Hernández, (eds.), *X Cumbre Mundial de Comunicación Política (Quito–Ecuador)*, 91-103. Argentina, Editorial Crujía. ISBN: 978-987-4168-02-3

- **Blasco-Duatis, M.** (2017). Politainment en tiempos de ignominia representativa. En D. Ivoskus, M. Hernández, (eds.), *XI Cumbre Mundial de Comunicación Política (Cartagena de Indias–Colombia)*, 116-125. Argentina, Editorial Crujía.

- Caldeiro-Pedreira, M.C., **Blasco-Duatis, M.,** Fernández García, N. (2017). Educación, comunicación y aprendizaje transmedia en el contexto europeo: más allá de la alfabetización. Colombia, Servicios de Publicación Universidad Manuela Beltrán. ISBN: 978-958-8744-73-5

- Fernández García, N., **Blasco-Duatis, M.**, Caldeiro-Pedreira, M.C. (2016). Communication and Education by Transmedia. Report on ICT skills in four secondary schools in Europe. *Cuadernos Artesanos de Comunicación*, 108. La Laguna, Sociedad Latina de Comunicación. DOI: 10.4185/cac108en

4.1.1. Artículo I

Blasco-Duatis, M., Fernández García, N., Cunha, I. (2017). Political opinion in the Spanish newspapers. Analysis of the period General Elections campaign in Spain, 2015. *Revista Latina de Comunicación Social*, 72, 349-373. DOI: 10.4185/RLCS-2017-1169en

Political opinion in the Spanish newspapers. Analysis of the period General Elections campaign in Spain, 2015

Marc Blasco-Duatis [CV] [ID] [G] Investigador en Formación de los Grupos de investigación GRECS y CIMJ. Universitat de Girona, UdG (España) y Universidade Nova de Lisboa, UNL (Portugal) - marc.blasco@udg.edu

Nuria Fernández García[CV] [ID] [G] Investigadora del Gabinete de Comunicación y Educación. Universitat Autònoma de Barcelona, UAB (España) - nurfergar@gmail.com

Isabel Cunha [CV] [ID] Profesora Asociada con Agregación. Universidade de Coimbra, UC (Portugal) – barone.ferin@gmail.com

Abstract
Introduction. This article is part of the results obtained by the author during his doctorate research entitled "Opinar de política, mediatizar democracias. El storytelling de la opinión política en los medios de comunicación españoles y los nuevos escenarios transmediáticos para la acción social".
Methodology. This research it's an original approach about the construction of public opinion by the leading newspapers in the Spanish General Elections of 2015 context and based on the quantitative analysis and methodologies of content analysis about the opinion articles. **Results and conclusions.** With this analysis it's possible to map the representation of the thought on politics expressed by the opinion makers. The analysis of this published opinion about politics has allowed us to form an image about those actors who have participated as opinion makers, the topics that have been dealt with, the form and context and the way they have been presented and, in sum, the scenario proposed by the written press' opinion in the public debate involving the electoral political context.

Keywords
general spanish elections 2015; journalist of opinion; opinion essay; opinion makers; political communication; political opinion.

Contents

Traducción de **S Eliadou**
(Lic. en Filología inglesa. Dimotiko Sholeio Drosias, Chipre)

1. Introduction [01]

The article that follows is the result of the part of the doctorate project of the first signed titled "Political opinion, mediatizing democracies. The storytelling of political opinion in the Spanish media and the new transmedia scenarios for social action". It has special relevance, in it epistemic analysis, the study of the written press; In order to make visible the processes, the roles and the actors that take part in the production of the opinion on the published politics.

The rise and consolidation of the journalistic genre of opinion, which expands in multiple media and formats of the Spanish media system, has been accompanied by what I once considered as an "omnipresent referentiality of opinion-makers". These have become indispensable figures to understand the mass media and specifically the performance of the journalistic work. Authorized for their presumed vision and expertise, due to their media repercussions or their professional expertise, they occupy a growing ground in the Spanish media system that seems to want to cover a common minimum unifying opinions for large audiences.

The newspaper has been, and continues to be, a key space not only in the dissemination of facts, but also, and more and more especially, as an entity endorsed by public opinion to participate in the debate of ideas and social beliefs in all the areas. In this line, Paloma Abejón (2013) recovered in her study what years ago Jorge de Esteban (1976) ensured, in a shared vision with W. Abendroth and K. Lenk (1971), that among the main functions of the press is that of "channeling, awakening and fomenting the formation of opinion". It is especially this idea of "channeling" the one that comes into debate with the inherent and growing need that society demands to be informed in a globalized and hyperconnected world, where the citizen is no longer an isolated receptor.

In this conception the study has been developed, which wants to highlight what, in other times, it was an intuition: the opinion on politics in the Spanish written press it's in the hands of a very small group of opinion-makers, who at the same time deal with a small group of topics and that they do it with an omnipresent frequency in the daily agenda and in an increasingly politicized way.

In summary, the research presented makes an analysis of the opinion published in Spain by the opinion-makers of the five newspapers of general information, with state disemination and with greater circulation in the context of the period of the General Elections in Spain in 2015.

2. Theoretical framework

Polish journalist and writer Ryszard Kapuściński pointed out in a conversation with the journalist Iñaki Gabilondo in 2007 that, in his perspective, the mass media are more than the fourth power that

many turn to. He pointed out that in the role of politics it becomes increasingly relevant when we see insurgents and coup makers changing the target of attacks to parliaments and governments, in order to be done, in the first place, with the control of radio transmissions, television or newsrooms. In 'The Empire', Kapuściński illustrated this thought with the following words:

> "A new script has been created for the movies dealing with coups: the tanks leave at dawn with the aim to occupy the television station, while the president sleeps so calm and the Parliament remains dark and deserted; The coup leaders head to the place that holds the real power. I underline the word "real".

Far from the reflections of the Polish intellectual is the theory of participatory democracy in which a *polis* was constituted where the power of decision and action resided in the community, in the purest style of what the "founding fathers" of the American nation embodied in their Constitution. The contemporary society is an extremely complex and changing entity in which multiple actors interact under many diverse conditions. Lippman (1920) concludes that the 'Great Society' in which we live "radically challenges our capacity for understanding, because what the citizen knows about the events that concern him, he knows it by second, third or fourth hand. He can no longer go and observe for himself. "

In this space, Lippman understands that individuals are related and act together in an environment that is no longer the visible world of households, neighborhoods, and communities. It is an invisible environment that needs to receive information and where media should acquire the role of suppliers, although they end up elucidating an informative *pseudo-environment* [2] plagued of dubious news "with no requirement for reliability, credibility test or punishment for perjury" (Lippman, 1920).

The last decades have been a testimony of a global level of great social, political, economic and cultural changes. The traditional media are now in a permanent state of "check" in the continuum of transformations that they experience at all levels. The technological convergence of the digital world stimulates a deep reflection on the routines that concretely challenge the profession of journalism. What, in their days, McCombs and Shaw presented us as "the market of the ideas", seems that, and from its purest capitalist logic, those who came out winning were again the great wholesalers; In this case, of information. Chomsky (1992) constructed his own vision -of what would later be verified- about the link of the theory of *agenda-setting* beyond its function of thematic computer of the present:

> "The social purpose of the media is to instill and defend the economic, social and political agenda of privileged groups that dominate the State and society of the country. The media fulfills this purpose in different ways: by selecting topics, distributing interests, articulating issues, filtering information, emphasis and tone, and also by keeping the debate within the confines of the current premises".

In this context, the large Spanish media groups have burst into public debate through their gurus, experts, consultants and opinion-makers [3]. These have now become "authentic factories of opinion-makers who nurture the Spanish news landscape and nourish themselves by their own opinion-makers, leaving little room for independent opinion-makers" (Abejón Mendoza, 2013).

Likewise, Abejón Mendoza assures in this line that the receivers are extremely polarized from an ideological perspective and it is from those positions that they look for products that manage to ratify their ideas, not to expand them.

Similarly to the above ideas, the recent "Report on democracy in Spain 2015" published by Fundación Alternativas, shows us how the evaluation of the press and plurality of information in the period 2008-2015 has evolved. Although slight recovery along 2014 is experienced, both indicators are moving in fairly low levels throughout the period:

Graphic 1. Evolution of the value of the press and the plurality of information in Spain (2008-2015)
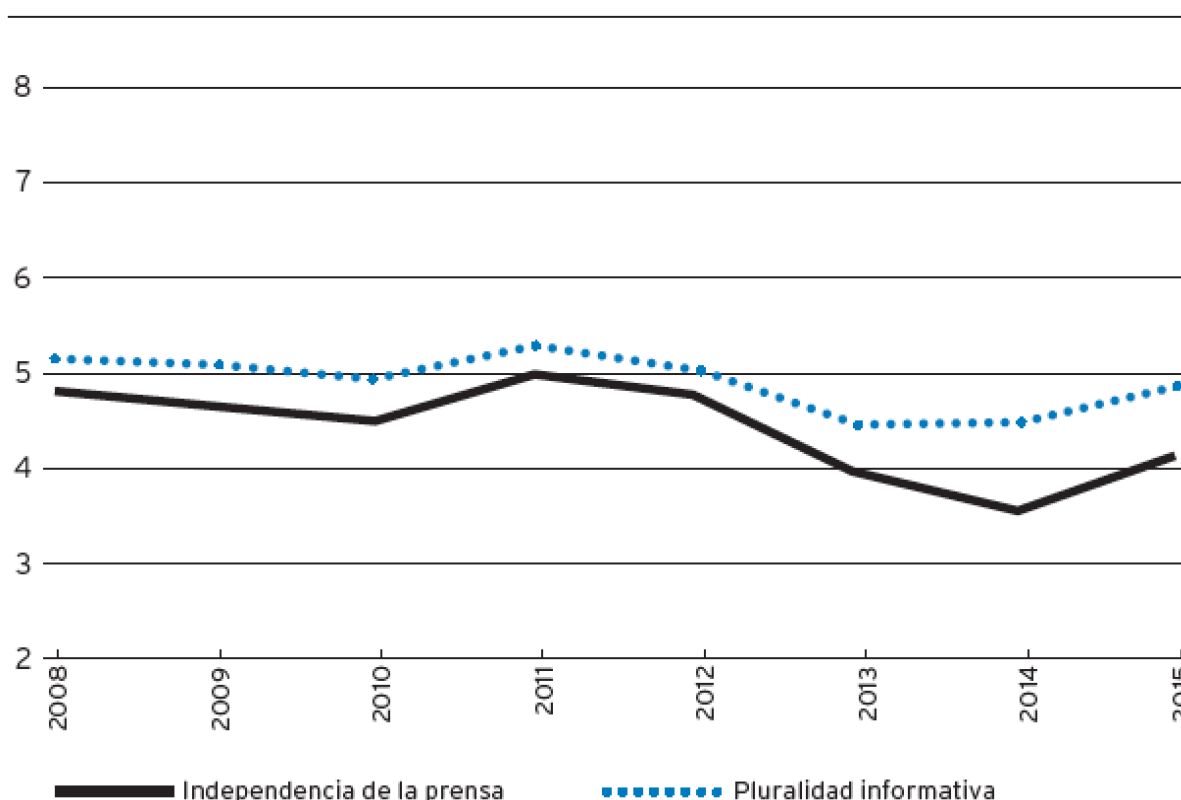
Source: Fundación Alternativas, in the Report on democracy in Spain 2015.

If from this short frame we focus on the journalistic genre of opinion and more specifically on the opinion on politics in the written press, this is more likely today the manifestation of "a very particular and urgent ideological perspective, emotional, and through which an opinion is expressed for any subject" (Casals, 2004). We are facing a selected group of actors belonging to the elites, as understood by the definition of Rocher (1971):

> "these people and groups are understood as those, who, thanks to the power they hold or the influence they exert, contribute to the historical action of a collectivity, either by the decisions made, or by the ideas, feelings or emotions that they express or symbolize".

These elites have a great organizational and constructivist capacity for discourse, causing "effective political disturbances that influence the political decision-making processes" (Higley & Burton, 2003).

The recent report elaborated by the University of Oxford and published by the "Reuters Institute for the study of journalism" concludes with concern that the media in Spain are the least credible of the eleven European countries consulted and the second country less credible to world level, above only of the United States. However, according to the same report the Spaniards are the ones who demonstrate the most interest in the news: 85%. The data collected by the study shows that only 34% of Spanish citizens trust in the news published in the media and only 46% (at the end of the study line) in the news published by the media of habitual consultation of the citizens, as the following chart shows:

Graphic 2. Confidence levels on the news in the media (all countries)
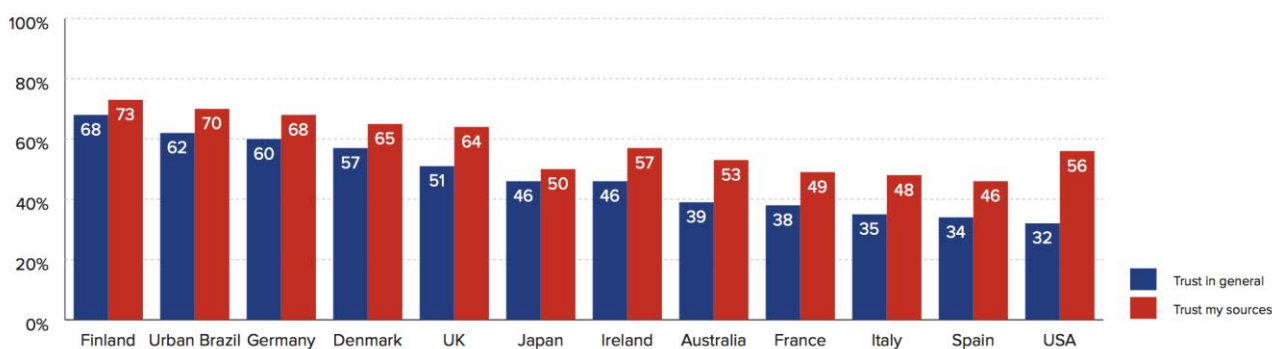
Source: Reuters Institute for the study of journalism.

Depending on the data, it is essential to reflect on the space occupied by the genre of opinion in today's journalism and in the global media in Spain. Faced with a proven loss of credibility of the citizenship for the journalistic product in general, we encounter a growing interpellation of the spaces of debate, discussion, columns of opinion or articles of analysis in some media that they increasingly tend to tell their audiences "about the thought and not about what to think" (Cohen, 1963).

Van Dijk himself (2010), recovered from (Vásquez Patiño and Peña Tamayo, 2012) reflects on the framework of cultural, social, aesthetic and technical interrelations that the press presumes. In this sense, the newspapers infer in the construction of the political culture of the countries by being pieces in a permanent thrust within the cultural industry. He also adds that both the news and the opinion articles of the newspapers, are pieces "constructed by the epistemic elites that can be studied at the *Critical Epistemic Analysis of Discourse*, while they are conceived as primary sources of non-empirical knowledge of the citizens and even members of other elites."

Following the approach of the Dutch academic, he believes that "the discourse is about people, and therefore, it is crucial to elucidate the question on how it portrays people, which identities and roles are attributed to them, which relations are drawn between them, which affiliations are described, etc.". All this leads Vásquez Patiño and Peña Tamayo (2012) to consider that Van Dijk guides us to a

description of the spaces that lead to the recognition of the position of "us" and "them", between members of the same group and the other groups. For them, such interrelation entails the possibility of discovering the ideological character of the enunciator.

Noam Chomsky, a few years ago (2002), warned us that the press had increasingly become the primar instrument of manipulating information, biased communication and economic, political and ideological pressure. Faced with this, the academic acknowledged that because of its possibilities of access to the surrounding reality from serenity and reflection, it was not enough to censor it by negative dispositions of its consumers, rather they should adopt an attitude of "critical suspicion" and of systematic analysis of its contents.

In order to conclude this chapter it is essential to define the theoretical context in relation to the journalistic pieces that the investigation presented has analyzed: the opinion article.

Following the elementary classification of the journalistic genres of Moreno Espinosa (2003), between "those who make facts known, who use the expository, descriptive and narrative way and those who make ideas known, that basically use the argumentative way", we concentrate on the second group where Martin Vivaldi (1981) proposed a definition that we believe to be complete when he refers to a "text of a very large and varied content, of a very diverse and varied way, in which a fact or a current idea of special importance is interpreted, valued or explained, according to the conviction of the writer. "

Taking this definition, Antónia do Carmo Barrigo (2014) considers that we could classify the opinion-makers into three broad categories: "those who exercise a political/partisan activity; those who exercise a qualified activity (business, technical, academic, cultural), and those who have a regular presence in the media (in terms of time/seniority and frequency/assiduity) depending on the value of the opinion they transmit". It is in this last profile that the academic considers the differentiation of two groups: the first one formed by the journalists (directors, sub-directors and prestigious journalists) and a second group which is defined as "actors that acquire and reinforce social and media visibility through the opinion spaces (the latter may have associations to the previous categories)."

In relation to the structures that follow -according to their content- about the different opinion articles, Cantavella (2000) proposes four models:

1. Those that manifest the opinions of their authors in a calm way and from the height of the generic principles, in line with the doctrinal article.

2. Those that descend to the political and social struggle, because they try to apply some principles to the reality of each day, with a position that is perceived as controversial and belligerent.

3. Those that report facts that the journalist has come to know and contributes to the whole of the newspaper from this same space. Usually it is not specifically about news, but rather about glimpses, declarations, deductions, impressions and rumors, together with interpretations and comments: fringes of the news that the editor pursues.

4. A derivation of the previous ones consists of those that are related to the chronicle of society, because they inform about facts happening worldwide. Nor are they real news the ones that

usually appear there, but minor facts, coated with jokes, details and even malignities in relation to those who are famous.

To conclude, Ortega y Gasset pointed out in "The rebellion of the masses" (1930) that the idea turned out to be a "check" to the truth:

> "Whoever wants to have ideas needs to be ready to love the truth and to accept the rules of the game that it imposes. It is not worth talking about ideas or opinions when one does not recognize the body that regulates them, a series of norms that can be appealed in the discussion. These norms are the principles of culture. I do not mind which ones, what I do say is that there is no culture where there are no rules that our neighbors can utilize."

Such thoughtful reflections seem to have been diluted over time by the need for the use of the word by *opinion makers* [**04**] who are increasingly postulated as accredited "experts" to participate in the public debate. Toni Aira, an expert in political communication, pointed out in his doctoral thesis (2010):

> "The *spin doctors* of the 21st century have the mission of associating the movement of opinion and the execution of the story of events. These new attributions, added to the traditional ones of these advisors of first level, have led authors like Evan Cornog to defend as far as a change in its denomination. Cornog specifically defends that *spin doctors* have become story spinners, in the sense that they help their leaders to construct a story of their own at the moment they find the best methods to spread the message".

It is in this line, that we propose the present study on the opinion article, which not only focuses its analysis on the perspective of the information and knowledge structure that it proposes, but also seeks to deepen in the power relations established by its dynamics of publication.

3. Objectives and methodology

The main objective of the present article is to map and analyze the opinion on politics in the Spanish written press of generalist character and with national circulation; also, the profile of its opinion-makers, the media / communication groups who disseminate their reflections and issues that raise opinion in the General Elections in Spain within the period of 2015. This is an original approach that concerns the issue of General Elections of 2015 and allows evaluating the construction of public opinion by the written press. For this, we have opted for a basically quantitative analysis and based on methodologies of content analysis of opinion articles (Martínez Rodríguez, 2011). As Krippendorff (2004) proposes, we have worked essentially in the line of a content analysis with the purpose of constructing valid inferences and framing the context in which the articles are presented.

To know who is involved in the Spanish written press in the electoral period referred, which professional sectors they represent, which ideological position they hold in relation to the issues dealt with during the electoral period, which debates are promoted in the whole of their opinions. We analyze the links that are established according to the topics proposed by the opinion-makers and in relation to the editorial lines of the newspapers, in which a notable contribution to the establishment of the thematic agenda is represented. These are the main points that the article presents from an

analysis that goes beyond the "semiotic understanding of discourse and the pragmatism between sender and recipient" (Casals, 2004). The emitters, *opinators* in our context, are the protagonists of the *word* and at the same time observers of what they consider to be possible. To understand their ideological commitments as social agents and deepen the study of how they are seen in the context of the media space is the focus of the progress of the results achieved.

The methodological dimensions that have been followed in the development of this research are defined by:

▪ Temporal dimension: The temporary context of study focuses on the period 'General Elections in Spain' in 2015. Specifically, the 32 days from the beginning of the election campaign on December 4, 2015 until to January 4, 2016, that is to say, the fifteen days after the day of the elections (December 20, 2015). In this way a balance is obtained between the analysis of the election and post-election campaign dates[5].

▪ Spatial dimension: The study has focused on the analysis of the five newspapers *El País, El Mundo, La Vanguardia, Abc* and *La Razón*. It tackles with the diagnosis of all the texts on political issues and the genre of opinion. In this sense, articles of opinion or analysis that reflect the deliberate interpretation that the author gives on current news issues are incorporated into the study (Yanes Mesa, 2004).

The newspapers have been selected following the General Media Study (October 2015 to May 2016) **[05]** and taking as reference the first five printed media of general information and with a coverage integrated throughout the Spanish State. They have also been contrasted with the data of the platform O.J.D. (Office of Dissemination Justification) in the period analyzed for bigger reliability of the election and with a matching result. In this sense, headlines such as *El Periódico* or *La Voz de Galicia* have been discarded from the analysis by failing to meet this premise of state coverage.

In addition, these five newspapers "draw an arch, which would go from El País to Abc, that practically covers all the ideological options of political representation in our country" (López García 2004: 15).

Table 1. Selected printed media of general information

Newspaper	Readers / day (thousands)
El País	1.299
El Mundo	815
La Vanguardia	651
Abc	485
La Razón	249

Source: *General Media Survey (EGM) October 2015 - May 2016.*

▪ Thematic classification: The articles of these newspapers have been analyzed from their printed version because it was more reliable to be able to contrast, in their entirety, all the

published texts and to select those that were integrated in the political opinion genre by their formal structures and content. In this sense, we have collected only the political opinion articles that the printed newspapers integrate in the different sections of their editions and all the articles that appear integrated in the space of "opinion section" of each newspaper (whether of a political theme or not). The last ones were collected as a group -as we differentiate those dealing with politics from those who do not- in order to be able to perform future analyzes on opinion leaders who hold fixed spaces in the sections of opinion in the main Spanish newspapers.

It should be noted that the collection and analysis of the editorials of the newspapers under study have been discarded since it was considered that we could not equate the opinion versed by the director of the newspaper with the opinion-makers of the media. The editorials "reserve the power to translate the language of the facts reported in the press, unintelligible to the non-specialized, in terms of general comprehensibility" (Moreno Espinosa, 2003) and by their characteristics "enclose a relationship of dialogue with the State, although formally they are addressed to public opinion "(Marques de Melo, 1985) and, therefore, the representative voices of each newspaper have been analyzed by the firm.

In relation to the working method, this has been based on the development of the following phases:

- Collection of the whole of published articles of political opinion during the period analyzed by the newspapers cited above. The daily average of articles was 56 and the total number of articles collected and under study was 1818 as shown in the following table:

Table 2. Frequency of articles analyzed in the media of the sample

	Nº articles analyzed	% articles analyzed	Average articles / day
El País	325	17,9%	10
Abc	325	21,9%	12
El Mundo	325	17,4%	10
La Razón	401	22,1%	12
La Vanguardia	378	20,8%	12
TOTAL	1818	100%	56

Source: *Own elaboration.*

- Indexing of the whole of the opinion articles in a database where the following fields were compiled: publication date of the article, name and surnames of the author of the text, title of the article, newspaper where it appears published, page where the article is located, theme of the text, and finally, the location in the section of the newspaper.

Figure 1. Database of fields compiled for the analysis

Source: *Own elaboration*

- Elaboration and study of a census of the main "TOP" opinion-makers of the period analyzed according to their publication frequency and, consequently, of the percentage of opinion that they represent on the accumulated global. The following fields are considered: gender, date of birth, Spanish region of residence, academic formation, means of communication where they write, profession, ideological tendency, if they have a personal web page, if they have an official Twitter account and the number of followers.

The set of authors that write during the period in the whole of the five printed newspapers ascends to 627; 540 of them being men (H), 86 women (M) and 1 anonymous (A). In the following table they are represented by newspaper:

Table 3. Opinion-makers of the sample by gender and newspaper

	El País	*Abc*	*El Mundo*	*La Razón*	*La Vanguardia*	**Total**
H	147	110	81	95	107	540
	85%	89%	85%	87%	84%	86%
M	25	14	14	13	20	86
	15%	11%	15%	12%	16%	14%
A	0	0	0	1	0	1
	0%	0%	0%	1%	0%	1%
Total	172	124	95	109	127	627

Source: *Own elaboration*

In a second table we present the total computation of the articles analyzed in relation by newspaper and by gender:

Table 4. Articles of the sample by gender and newspaper

	El País	*Abc*	*El Mundo*	*La Razón*	*La Vanguardia*	**Total**
H	274	347	278	334	280	1513
	84%	87%	88%	83%	74%	83%
M	51	51	38	50	98	288
	16%	13%	12%	13%	26%	16%
A	0	0	0	17	0	17
	0%	0%	0%	4%	0%	4%
Total	325	398	316	401	378	1818

Source: *Own elaboration*

- Coding of the issues raised by the group of opinion-makers during the period analyzed. Categorization of the topics from 'ta1' to 'ta240' according to the order of appearance, with 'ta1' being the first theme appearing in the first article analyzed. We identified a total of 240 subjects treated in the whole of the 1818 articles analyzed. It should be noted that not necessarily every article analyzed is linked to only one subject. Consequently, each article is coded in relation to as many topics (categories) as it deals with...

Figure 2. Database of categories of the analyzed subjects

Source: *Own elaboration*

Of all the 1818 articles analyzed, 873 belong to the opinion section of the five media. Of these, those who do not deal with political issues have been coded with the "ta0" to be able to remove them later from the analysis with political content. As a result, the total opinion articles dealing with political issues are 1600, where 655 belong to the opinion section and 945 are encountered in other sections of the newspapers as shown in the following table:

Table 5. Politics articles from the 'opinion section' of the newspapers

	They are not about politics	They are about politics
El País	35 (34,6%)	66 (65,4%)
Abc	24 (13,9%)	149 (86,1%)
El Mundo	42 (21,5%)	153 (78,5%)
La Razón	20 (11,8%)	149 (88,2%)
La Vanguardia	97 (41,3%)	138 (58,7%)
Total	218 (25%)	655 (75%)

Source: *Own elaboration*

Within the framework of this thematic coding, the code "id" has been used to identify those articles that contained indicators of an insulting tone or demagogue. Following what the RAE defines as "the offense towards someone with their words", in relation to the insult; Or how to "win over the popular favor with flattery" referring to demagogy, the articles have been coded according to the guidelines previously described in relation to the theme that they raised and adding the code "id" in case of identifying those markers.

- Finally we establish a "TOP ranking" of opinion-makers within the analyzed period as well as the topics discussed in order to simplify the analysis and focus of the results. In this sense, we have analyzed the profile of the 73 journalists, out of the 627 that participated, with the highest frequency of publication in the period. This "TOP73" is obtained from the calculation that represents the number of articles published by each author within the period; Concluding that these 73 authors represent exactly 50% of the articles published in the overall period and, therefore, we can also affirm that they are a sample of 50% of the opinion published in the five main print media of the State.

4. Results and analysis

In the analyzed period specified from December 4, 2015 to January 4, 2016 (campaign and post-campaign period of the General Elections of December 20, 2015), a total of 627 opinion-makers have participated as opinion-makers. Of these, 540 are men (86%), 86 are women (14%) and one signs as anonymous.
.
The 627 opinion-makers produced a total of 1818 opinion articles within the 32-day period in the whole of the five newspapers analyzed. Of these 1818 articles of opinion, 873 (48%) are located in the actual sections of opinion of each newspaper and 945 (52%) in other sections of the newspaper. Of these last ones only those dealing with issues related to political aspects have been compiled,

unlike the first that have been compiled in their entirety. Therefore, in relation to the 873 (48%) articles located in the opinion sections, it should be noted that 218 (25%) do not deal with political issues and 655 (75%) do. The following table lists the location of the articles in each newspaper:

Table 6. Location of opinion articles about politics

	Opinion section	Non Opinion section
El País	66 (23%)	224 (77%)
Abc	149 (40%)	225 (60%)
El Mundo	153 (56%)	121 (44%)
La Razón	149 (39%)	232 (61%)
La Vanguardia	138 (49%)	143 (51%)
Total	655 (41%)	945 (59%)

Source: Own elaboration.

From the data presented in the above table, it should be noted that, although newspapers have a section specifically for opinion, four of the five newspapers publish more opinion articles outside that section than inside. Specifically, the case of *El País* stands out where only 23% of the opinion articles, on political issues, appear integrated in the opinion section.

It is an interesting fact in the analysis to detect the sections where the articles of opinion analyzed are more frequently published when they do not appear in the opinion section itself. In this sense, the following table shows the 'TOP10' of these sections according to their frequency of publication in the whole of the five newspapers:

Table 7. 'TOP10' on the location of articles published outside the opinion section

	Section	Frequency	%
1	Spain	222	12,2%
2	Politics	111	6,1%
3	Own spaces of each newspaper[6]	103	5,6%
4	Spain (20D Elections)	92	5,1%
5	Back cover	69	3,8%
6	Focus	65	3,6%
7	International	63	3,5%
8	Economy and business	56	3,3%
9	Letters from readers	22	1,2%
10	Culture	20	1,1%

Source: Own elaboration.

As can be seen, the first four sections are closely linked to the space of the newspapers for the political-social analysis of the State, or, as in the case "Spain (Elections 20D)", to the electoral period itself. The back cover space is used repeatedly for the publication of short articles in the format of

columns and especially by *El Mundo, El País* and *Abc.*

If from the same perspective we analyze the pages of the newspapers with a greater frequency of publication of articles of opinion about politics, we find that their first pages usually have a greater load in relation to the interior or final pages as can be seen in the table:

Table 8. 'TOP10' on the location of the articles in the pages of each newspaper

	# page	*El País*	*Abc*	*El Mundo*	*La Razón*	*La Vanguardia*
1	2	57 (25%)	19 (8%)	75 (33%)	77 (34%)	0 (0%)
2	5	1 (1%)	28 (26%)	51 (46%)	29 (27%)	0 (0%)
3	4	8 (8%)	2 (2%)	28 (30%)	57 (60%)	0 (0%)
4	12	27 (30%)	37 (40%)	8 (9%)	17 (19%)	2 (2%)
5	15	8 (11%)	41 (55%)	2 (3%)	14 (19%)	9 (12%)
6	Contra	20 (29%)	3 (4%)	33 (48%)	13 (19%)	0 (0%)
7	14	19 (28%)	38 (56%)	2 (3%)	4 (6%)	5 (7%)
8	13	13 (21%)	32 (53%)	2 (3%)	8 (13%)	6 (10%)
9	16	9 (18%)	14 (28%)	3 (6%)	13 (26%)	11 (22%)
10	18	13 (28%)	3 (6%)	4 (8%)	19 (41%)	8 (17%)

Source: Own elaboration.

The uniformity in the publication of the opinion on politics in the first pages of the newspapers *El Mundo*, *La Razón*, *Abc* and *El País* is remarkable; although the last two use more advanced pages (from 12 to 16) more frequently in the global count. It is noteworthy that in the case of *La Vanguardia* the logic that we can see in the other four newspapers is not followed. In this case the articles appear more distributed along the pages of the newspaper and mainly pages 23 to 29 are used. Also note the remarkable concentration of articles between pages 2 to 15, which exceeds 44% of the published entirety.

An aspect also noteworthy is the frequency of publication of the articles according to the temporal space within the 32 days analyzed. In this sense, the most prominent are the 21st and 22nd of December with a greater frequency of publication in the global count. Not coincidentally, both dates belong to the two days after the elections and the increase of opinion-makers is remarkable as can be seen in the table:

Table 9. 'TOP10' on the frequency of publication by date

	Date	Frequency	% representative opinion	% cumulative
1	21-DIC-2015	90	5%	5%
2	22-DIC-2015	79	4,3%	9,3%
3	15-DIC-2015	75	4,1%	13,4%
4	17-DIC-2015	72	4%	17,4%
5	18-DIC-2015	70	3,9%	21,3%
6	16-DIC-2015	68	3,7%	25%

7	10-DIC-2015	66	3,6%	28,6%
8	13-DIC-2015	65	3,6%	32,2%
9	20-DIC-2015	64	3,5%	35,7%
10	14-DIC-2015	62	3,4%	39,1%

Source: Own elaboration.

Also noteworthy is the increase in articles and opinion-makers on December 15, a date that coincides with the day after the face-to-face debate between candidate Mariano Rajoy (PP) and candidate Pedro Sánchez (PSOE). Finally, note that December 17 coincides with the day after the aggression against the candidate Mariano Rajoy by a young man, when he punched him while being on a field trip in the center of the town of Pontevedra (Galicia).

One of the most significant data of the study, and at the same time more worrying, is the little or minimal representation of women in the opinion of the five newspapers. If we check the global data reached, we can see that only 86 of the 627 (14%) of the opinion-makers in the analyzed period are women. In relation to the number of articles the figures are similar, representing a 16% of the number of texts signed by women. The following table shows the numbers for each newspaper and in relation to the total number of women / men (A) and number of articles published (B) in each case:

Table 10. Frequency of publication by gender

	El País		Abc		El Mundo		La Razón		La Vanguardia	
	A	B	A	B	A	B	A	B	A	B
M	147	274	110	347	81	278	95	334	107	280
	85%	84%	89%	87%	85%	88%	87%	83%	84%	74%
W	25	51	14	51	14	38	13	50	20	98
	15%	16%	11%	13%	15%	12%	12%	13%	16%	26%
A	0	0	0	0	0	0	1	17	0	0
	0%	0%	0%	0%	0%	0%	1%	4%	0%	0%
Total	172	325	124	398	95	316	109	401	127	378

Source: Own elaboration.

The case of *La Vanguardia* stands out where the percentage of participation of opinion-makers in relation to the production of their articles of opinion is substantially smaller in comparison to the other four headers. That means fewer opinion-makers write more articles. It is especially pronounced in the case of the women opinion-makers of *La Vanguardia* where the variation is of 10 percentage points.

One of the most noteworthy axes of the present investigation is situated in the themes that have aroused the opinion of the whole of the opinion-makers analyzed. In relation to this, and following what was previously described in the section on methodology, a total of 240 issues have been coded about different aspects related to the politics and within the global count of opinion-makers of the five headings under study. These issues have been dealt with, more or less frequently throughout the

period as well as with notable differences among the five newspapers. One of the most noteworthy data is that only 13 out of the 240 issues treated by the group of opinion-makers concentrate 51% of the opinion of the period. In other words, 51% of the opinion articles deal with any of these 13 issues; the remaining 49% do so on one of the remaining 228 issues. Below we present the 'TOP25' (representing 72% of the opinion themes) of the most recurrent themes:

Table 11. 'TOP25' of the topics with the highest frequency of opinion [7]

	Topic	Frecuency	%
1	Against Podemos and/or Pablo Iglesias	138	8,6%
2	War of Syria, terrorism, jihadism, Islamic State, DAESH, ISIS	85	5,3%
3	Party agreements / government formation policy	80	5%
4	Catalan process	77	4,8%
5	Starting of campaign and/or generalities of the electoral campaign	59	3,7%
6	Old politics, new parties and end of bipartisan system	56	3,5%
7	In favor of the PP and/or Rajoy	53	3,3%
8	Against Pedro Sánchez and PSOE	50	3,1%
9	Debate of two; face to face in the Spanish TV Academy	48	3%
10	Against Catalan nationalism / separatism	43	2,7%
11	The Great debate 7thD	43	2,7%
12	*infotainment* of politics, participation in televisión programs and political *talk show*	42	2,6%
13	Against the CUP	41	2,6%
14	Against the left Spanish in general	36	2,3%
15	Venezuela, elecctions	34	2,1%
16	The great PP-PSOE coalition pact	33	2,1%
17	Constitution and/or constitutional reform	29	1,8%
18	Against the policies of the government of Madrid and Manuela Carmena on the withdrawel of plates of Franco's names from the streets	27	1,7%
19	Pact of investiture of the CUP with Artur Mas	27	1,7%
20	General Spanish political status and/or current situation	27	1,7%
21	Climate change Summit in Paris	25	1,6%
22	The result of a tie in the assembley of the CUP for the investiture of Artur Mas	25	1,6%
23	Punching and aggression of a young man to Mariano Rajoy	25	1,6%
24	Church and Catholicism	25	1,6%
25	Internal dispute in PSOE to lead the party,Susana Díaz y Sánchez	24	1,5%

Source: Own elaboration.

As can be seen, it is very remarkable that 8.6% of the articles of opinion of the period are clearly manifested against the political party Podemos and / or its candidate Pablo Iglesias. Likewise, the Syrian conflict and jihadist terrorism (5.3%) stand out with high percentages; Government formation and pacts policy (5%); Issues related to the Catalan process (4.8%); or, for example, it stands out the 3.3% support to the Popular Party and / or its candidate Mariano Rajoy, or the 3.1% of articles of opinion against the candidate Pedro Sánchez and / or the PSOE.

It is interesting to note from the presented scale some issues that, although they appear with smaller percentages in their global perspective, were important focus points of opinion in specific days of the analyzed period. Specifically, from the 'TOP25' topic 9 about the "Debate of two; face to face in the Spanish TV Academy", theme 11 "The Great debate 7[th]D", theme 21 on the "Climate change Summit in Paris", item 22 on "The result of a tie in the assembly of the CUP for the investiture of Artur Mas" or item 23 of the "Punching and aggression of a young man on Mariano Rajoy"; all of these configured the main topics of opinion in their respective days in the five headings analyzed.

Also interesting is a more detailed reading of what is presented in the 'TOP25' of subjects and for this reason we have considered appropriate to present the 'TOP13' of the subjects which, as mentioned above, concentrate 51% of the opinons in that period, in relation to their frequency of opinion in each newspaper as shown in the following table:

Table 12. 'TOP13' of the topics with the highest frequency of opinion per newspaper

	Topic	El País	Abc	El Mundo	La Razón	La Vanguardia
1	Against Podemos and/or Pablo Iglesias	1,5%	40,5%	13%	41,2%	3,8%
2	War of Syria, terrorism, jihadism, Islamic State, DAESH, ISIS	10,7%	25,3%	8%	28%	28%
3	Party pacts/government formation policy	16,7%	20,8%	22,2%	22,2%	18,1%
4	Catalan process	35,3%	11,8%	26,5%	11,8%	14,7%
5	Starting of campaign and/or generalities of the electoral campaign	2%	48%	7,7%	36,5%	5,8%
6	Old politics, new parties and end of bipartisan system	11,8%	7,8%	25,5%	27,5%	27,5%
7	In favor of the PP and/or Rajoy	0%	44,9%	16,3%	38,8%	0%
8	Against Pedro Sánchez and PSOE	11,6%	32,6%	27,9%	18,6%	9,3%
9	Debate of two; face to face in the Spanish TV Academy	7,1%	35,7%	21,4%	28,6%	7,1%
10	Against Catalan nationalism / separatism	22,5%	15%	7,5%	30%	25%
11	The Great debate 7[th]D	14%	14%	18%	28%	26%
12	*infotainment* of politics, participation in television programs and political talk show	12,8%	33,3%	15,4%	35,9%	2,6%
13	Against the CUP	10,3%	30,8%	28,2%	20,5%	10,3%

Source: Own elaboration.

The table above highlights all those percentages that in the comparison with the five newspapers have been treated in a superior way (a greater concentration of opinions). Again, the issue of "Against Podemos and/or Pablo Iglesias" stands out because of its percentage differences, where the percentages are clearly high on the *Abc* and *La Razón* newspapers (they concentrate 81.7% of the opinions on this topic). In the topic «Starting the campaign and/or generalities of the electoral campaign" we can see that basically *Abc* and *La Razón* are the ones sharing the percentage (84.5%). The seventh topic of the ranking, "In favor of the PP and/or Rajoy", stands out due to the fact that it does not obtain any percentages in the *El País* and *La Vanguardia* newspapers and summing up about 84% between *Abc* and *La Razón*. To conclude, we consider disparate and remarkable the percentages of the subject that closes the 'TOP13' "Against the CUP"; where about 80% of the opinion is concentrated in the newspapers *Abc, El Mundo* and *La Razón*.

On the other hand, we have also highlighted those articles that were clearly demonstrating an insulting tone and/or demagogue. Specifically, we have analyzed the articles of the 73 most frequently published opinion-makers' articles, which, at the same time, cover 50% of the opinion in the period. In this line, of the 909 articles published by these 73 opinion-makers, 65 (7%) had a clearly insulting tone and/or demagogue. In the following table, a ranking ('TOP6') of the opinion-makers with the most insulting opinion articles and/or demagogues within the analyzed period was created:

Table13. 'TOP6' of the opinion-makers with more articles marked as demagogues and / or insulting

	Opinion-maker	Demagogues and/or insulting articles	Total written articles	% of demagogues and/or insulting articles
1	Martín Beaumont, Antonio	9	22	41%
2	Ruiz-Quintano, Ignacio	5	18	28%
3	Camacho, Ignacio	4	30	13%
4	Garcia-Abadillo, Casimiro	4	17	24%
5	Rojo, Alfonso	4	9	44%
6	Tertsch, Herman	4	10	40%

Source: Own elaboration.

It is clearly noticeable that certain opinion-makers have percentages higher than 40% in the writing of articles marked with insulting and/or demagogic opinions. Also a point to emphasize is that of the 73 opinion-makers with the highest frequency of writing during the period, a total of 12 in the *Abc*, 10 in *La Razón*, 8 in *El Mundo*, 1 in *El País* and none in *La Vanguardia* wrote at least 1 article of manifested demagogy or insult.

In relation to the opinion-makers with a higher frequency of publication, we have bounded a 'TOP73' according to the 50% of opinion they represent in the period as it can be seen in the following table:

Table 14. 'TOP73' of the opinion-makers with the highest frequency of publication and who concentrate 50% of the opinion of the analyzed period

	Last Name, Name	Frequency	%	% valid	% accumulated
1	Sálmon, Álex	35	1,9	3,9	3,9
2	Camacho, Ignacio	30	1,7	3,3	7,2
3	Puigverd, Antoni	25	1,4	2,8	9,9
4	Rahola, Pilar	25	1,4	2,8	12,7
5	Luna, Joaquín	23	1,3	2,5	15,2
6	Ussia, Alfonso	23	1,3	2,5	17,7
7	Martín Beaumont, Antonio	22	1,2	2,4	20,1
8	Monzó, Quim	20	1,1	2,2	22,3
9	El submarino	19	1,0	2,1	24,4
10	Carrascal, José María	18	1,0	2,0	26,4
11	Del Pozo, Raúl	18	1,0	2,0	28,4
12	Rubido, Bieito	18	1,0	2,0	30,4
13	Ruiz-Quintano, Ignacio	18	1,0	2,0	32,3
14	Ferrer, Pilar	18	1,0	2,0	34,3
15	Ventoso, Luis	17	,9	1,9	36,2
16	Garcia-Abadillo, Casimiro	17	,9	1,9	38,1
17	Bolaño, Toni	16	,9	1,8	39,8
18	Gala, Antonio	16	,9	1,8	41,6
19	Sostres, Salvador	15	,8	1,7	43,2
20	Álvaro, Francesc-Marc	14	,8	1,5	44,8
21	Pérez-Maura, Ramón	14	,8	1,5	46,3
22	Pérez Oliva, Milagros	14	,8	1,5	47,9
23	Vidal-Folch, Xavier	13	,7	1,4	49,3
24	Marco, José Maria	13	,7	1,4	50,7
25	Gistau, David	12	,7	1,3	52,0
26	Ónega, Fernando	12	,7	1,3	53,4
27	Prieto, Martín	12	,7	1,3	54,7
28	Ramis, Llucia	12	,7	1,3	56,0
29	Espada, Arcadi	12	,7	1,3	57,3
30	Méndez, Lucia	12	,7	1,3	58,6
31	Pámies, Sergi	12	,7	1,3	60,0
32	Bonet, Joana	11	,6	1,2	61,2
33	Cuartango, Pedro G.	11	,6	1,2	62,4
34	González, Jaime	11	,6	1,2	63,6
35	Jiménez Losantos, Federico	11	,6	1,2	64,8
36	Bustos, Jorge	10	,6	1,1	65,9
37	De Prada, Juan Manuel	10	,6	1,1	67,0
38	Hernández, Abel	10	,6	1,1	68,1
39	Lacalle, Daniel	10	,6	1,1	69,2
40	López, Enrique	10	,6	1,1	70,3
41	Tertsch, Herman	10	,6	1,1	71,4

42	Albiac, Gabriel	9	,5	1,0	72,4
43	Belmonte, Rosa	9	,5	1,0	73,4
44	Bouza, Pepe	9	,5	1,0	74,4
45	Burgos, Antonio	9	,5	1,0	75,4
46	Lumbreras, César	9	,5	1,0	76,3
47	Rojo, Alfonso	9	,5	1,0	77,3
48	San Sebastián, Isabel	9	,5	1,0	78,3
49	Valenzuela, Curri	9	,5	1,0	79,3
50	Vidal, César	9	,5	1,0	80,3
51	Cabrera, Julián	9	,5	1,0	81,3
52	López Schilchting, Cristina	9	,5	1,0	82,3
53	Rallo, Joan Ramón	9	,5	1,0	83,3
54	Reverte, Jorge	9	,5	1,0	84,3
55	González, Ignacio	8	,4	,9	85,1
56	Jabois, Manuel	8	,4	,9	86,0
57	Lucas, Antonio	8	,4	,9	86,9
58	Martínez, Álvaro	8	,4	,9	87,8
59	Rayón, Fernando	8	,4	,9	88,7
60	Valdeón, Julio	8	,4	,9	89,5
61	Anson, Luis María	8	,4	,9	90,4
62	Foix, Lluís	8	,4	,9	91,3
63	Vallvey, Angela	8	,4	,9	92,2
64	Bosch, José Ramón	8	,4	,9	93,1
65	Bassets, Lluís	7	,4	,8	93,8
66	Del Valle, Ely	7	,4	,8	94,6
67	Juliana, Enric	7	,4	,8	95,4
68	Narváez, Pedro	7	,4	,8	96,1
69	Rodríguez Braun, Carlos	7	,4	,8	96,9
70	Torreblanca, José Ignacio	7	,4	,8	97,7
71	Trueba, David	7	,4	,8	98,5
72	Zaragüeta, Iñaki	7	,4	,8	99,2
73	Zarzalejos, José Antonio	7	,4	,8	100,0
	Total (73 opinion-makers)	**909**	**50,0**	**100,0**	**100,0**

Source: Own elaboration.

Finally, with the set of data presented previously. we have analyzed the profiles of all the opinion-makers of the 'TOP73' and we conclude the following sociodemographic data:

-   50% of the opinion in the written press in Spain during the period analyzed is in the hands of 73 opinion-makers. The other 50% is produced by 554 opinion-makers.

-   Of the 73 opinion-makers, only 12 are women, representing 16% compared to 84%.

-   The average age of the opinion-makers is 59 years old.

- 50% of the opinion-makers are from the regions of Madrid (27%) and Catalonia (23%). They are followed by distance by Castilla y León (13%); Andalusia (7%); Castilla La Mancha, Galicia and the Basque Country with 6%; Aragon and the Valencian Community with 4%; and finally the Region of Murcia, Asturias, Balearic Islands and Cantabria with 1%.

- Regarding the academic formation of the opinion-makers, 86% of them have university degrees, 7% have no university studies completed, 4% have a doctorate degree and 3% are university professors.

- Of the group of opinion-makers with the highest frequency of publication from the 'TOP73', 36% belong to the newspaper *La Razón,* 23% to *Abc,* 16% to *La Vanguardia,* 15% to *El Mundo* and 10% to *El País*. This data indicates that the newspapers with the highest percentage concentrate more opinion-makers with higher frequency of publication, being, therefore, La Razón the newspaper with a more fixed staff of opinion-makers and at the same time with fewer voices and El País the newspaper with a smaller fixed staff and with a bigger number of voices.

- 81% of the opinion-makers are journalists by profession, although some combine it with other professions as a writer or teacher.

- 80% of the opinion-makers are ideologically closer to conservative positions compared to 20% that are positioned in a more liberal than conservative space.

- 25% of the opinion-makers have a personal website where they collect their journalistic production.

- Finally, 58% of the opinion-makers have an active personal Twitter account. The average number of followers in the social network is close to 40,000.

5. Discussion and conclusions

One of the first conclusions reached by the present research is the relevance that currently the opinion on politics acquires in the five newspapers, after to check the important number of opinion articles that are published daily. On the other hand, it is particularly prominent that in four of the five newspapers (El País, Abc, La Razón and El Mundo) a great percentage of articles are encountered outside of the section of opinion. This leads us to be able to affirm that the opinion on politics in the Spanish written press is disaggregated into the newspaper and that in the section of opinion itself, clearly dominates the one connected with political issues.

On the other hand, the most recurrent sections, where the articles are concentrated are, beyond the opinion section, those linked to the current situation of the country, either in sections such as "Spain", "Politics" or "20D Elections"; as in those of each newspaper such as the "Page 2" section of *El País*, "Abc" in the newspaper *Abc* or "La Tercera" in *El Mundo*. Particularly noteworthy is the importance of the back cover in the publication of articles in the column format and, especially, the low representation of political opinion of the international scene. It is important to emphasize the importance that the opinion on politics represents in the press, which mostly is situated on the first pages of the edition.

Regarding the temporal dimension of publication of articles, it should be noted that there is a clear relation between the days with news of impact and the increase of opinion-makers and articles.

Therefore, there is a direct relation between the highlighted events by the media context (the day of the elections, the aggression against the candidate Mariano Rajoy or the face-to-face debate among others) and the increase of opinion-makers in the following day in the newspapers.

An alarming data that the research leaves us is the gender perspective among the opinion-makers. The representation of women's opinion on politics in the context of the Spanish written press is insignificant. It should also be noted that the ratio of women opinion-makers and their production of articles is higher in relation to those of the men. This implies that fewer women produce more articles compared to men, an aspect that leads to even fewer women opinion-makers among the media.

In relation to the analysis carried out about the themes that have focused the attention among the opinion-makers, it is worth noting that, although a significant number of issues are proposed during the period, a very small number of those concentrate a higher percentage of opinion. Consequently, there is an accumulation of opinions and opinion-makers about the same group of issues and a passivity concerning the proposal of new subjects to the public and published debate of the media.

On the other hand, a clear ideological link is created between the opinion-makers and the editorial lines of the newspapers. The issues are polarized in a sphere of ideological debate that leads readers to ratify their positions with the proposal of the opinion-makers and the newspapers to which they are regulars. In this sense, it is verified that the topics that are focused in the media agenda become material of ideological polarization among the opinion-makers in search of a channel towards a dominant thought.

Although insult and demagogy is not something that characterizes the articles analyzed in our research, we do believe that it is noteworthy to point out that those few who employ this style do so persistently. It also emerges from the study that the tolerance level on such behaviors is unequal among the five newspapers.

In relation to the whole of the opinion-makers of the period and their frequency of production of opinion articles, it should be noted that a small group of opinion-makers concentrate the highest number of opinions of the period and, on the contrary, a large number of opinion-makers concentrate a percentage of opinion considerably lower in its comparison. In summary, this data implies that the leading role of the opinion published is in the hands of the regular opinion-makers and with a permanent link with the media, unlike those opinion-makers who are sporadically called by the newspaper to bring their "expert" look to a specific topic and that are dissipated among the established firms.

Finally, and in relation to the sociodemographic data resulting from the most frequently published opinion-makers, who concentrate more than 50% of the opinion of the period and who are representative of the opinion on politics published in the generalized written press analyzed in the period "General Elections in Spain 2015", the following profile is reached: a man close to 60 years old, living in the region of Catalonia or Madrid, a journalist by profession, with a university degree, with a more conservative than liberal ideological tendency, with a twitter account and an average close to 40,000 followers.

6. Notas

1 Probably the idea of the media as creators of an informational pseudo-environment that conditions the opinions of the citizenship is one of the most remarkable contributions of Lippman. The theorists of the agenda-setting consider it as the starting point of his approach: "Walter Lippman is the intellectual father of the idea now called, for brevity, agenda-setting" (McCombs, 2006).

2 See the documentary "The Trouble with Experts" de Josh Freed Broadcasting & CBC. (prod.) and Freed, J. (dir.).

3 Opinion maker or opinion leader. It has the ability to influence the attitudes or behavior of other individuals, to certain ways of thinking or acting, because it is perceived by others as an authority or a reliable source of information, news, or reflections.

4 The articles of December 25 and January 1 are not collected because the newspapers do not publish because they are festive.

5 Ranking of print media from October 2015 to May 2016. For more information access to http://www.aimc.es.

6 This field includes the "Page 2" section of the newspaper El País with 55 articles, "Abc" from the newspaper Abc with 26 articles and "La Tercera" from the newspaper El Mundo with 22 articles. For its similarity in its structure and purpose as a space open to opinion and analysis have been unified.

7 In this table, as in table 12, only opinion articles on politics have been taken into account, discarding the 218 articles of opinion sections that do not deal with politics.

6. References

Abejón Mendoza, P. (2013). Estado del periodismo de opinión en España: polarización, género y emolumentos. En: *Zer – Revista de Estudios de Comunicación*, Vol.18, Núm. 34. País Vasco: Universidad del País Vasco.

Aira, T. (2010). El protagonisme dels spin doctors. La política com a procés comunicacional. *Revista de la UOC*. Análisis 40, pp. 15-27.

Blasco-Duatis, M. (2013). Propuesta metodológica para el análisis de la tertulia política en televisión. Tesina de máster. Portugal: Universidade de Coimbra.

Cantavella, J. (2000). La columna informativa: un desafío de exigencia entre la omnipresente opinión. *Estudios sobre el Mensaje Periodístico*, núm. 6, pp. 53-62.

Casals Carro, M. J. (2004). La opinión en la prensa: retrato de España en el primer año del siglo XXI. En: *Estudios sobre el mensaje periodístico*, 10. Madrid: Universidad Complutense, pp. 9-66.

Chomsky, N. (1992). Ilusiones necesarias: control del pensamiento en las sociedades democráticas. Madrid: Libertarias/Prodhufi.

Chomsky, N. Y Ramonet, I. (2002). *Cómo nos venden la moto*. Barcelona: Icaria.

Cohen, B. (1963). The Press and the Foreign Policy. Princenton: Princenton University Press.

Do Carmo Barriga, A. (2014). El lugar del columnismo político en el periodismo actual. *Revista Comunicación y Sociedad*, núm. 22, julio-diciembre, pp. 79-102.

Embid, J. (coord.) (2015). *Informe sobre la democracia en España 2015*. Reformular la política. Madird: Fundación Alternativas.

Higley, J. & Burton, M. (2003). Elites, classes politicas e democracia no seculo XXI. En A. C. Pinto & A. Freire (Dir.), Elites, sociedade e mudança politica, pp. 277-294. Oeiras, Portugal: Celta.

Josh Freed Broadcasting & CBC. (prod.) y Freed, J. (dir.). (2011). The Trouble with Experts [Documental]. Canadá. Recuperado de: https://www.youtube.com/watch?v=in5TvfruyLM [Last query: 3/12/2016]

Kapuscinski, R. (2007). *La voz del Otro*. Madrid: Editorial Tripodos.

Kapuscinski, R. (2007). *El Imperio*. Madrid: Editorial Anagrama.

Krippendorff, K. (2004). *Content Analysis: An introduction to its methodology.* Thousands Oaks, CA: Sage.

Lippman, W. (1920). *Liberty and the News, New York, Hancourt, Brace and Howe.* Versión española: (2011) Libertad y prensa. Madrid: Tecnos.

López García, G. (2004). *Comunicación electoral y formación de la opinión pública: las elecciones generales de 2000 en la prensa española.* Valencia: Servei de Publicacions de la Universitat de Valencia.

Marques De Melo, J. (1985). *A opinão no jornalismo brasileiro.* Petrópolis, Vozes.

Martin Vivaldi, G. (1981). *Géneros periodísticos*. Paraninfo, Madrid (Tercera edición) p. 176.

Martínez Rodríguez, J. (2011). Métodos de investigación cualitativa. *Revista de Investigación Silogismo,* 1 (08).

McCombs, M. y Shaw, D. (1993). The Evolution of *Agenda-Setting Research: Twenty-Five Years in the Marketplace of Ideas. Journal of Communication*, volumen 43, número 2, pp. 58-67.

McCombs, M. (2006). *Estableciendo la agenda: el impacto de los medios en la opinión pública y el conocimiento.* Barcelona: Paidós.

Moreno Espinosa, P. (2003). Géneros para la persuasión en prensa: los editoriales del Diario El País. Revista *Ámbitos*, nº9-10, 2º Semestre, pp. 225-238.

Ortega y Gasset, J. (2006). *La rebelión de las masas*. Ed. Espasa.

Rocher, G. (1971). *Sociologia geral*. Lisboa: Editorial Presença.

Van Dijk, T. A. (2010). Discurso, conocimiento, poder y política. *Revista de Investigación Lingüística*, 13, 167-215. Universidad de Murcia.

Vásquez Patiño, M. W. y Peña Tamayo, J. J. (2012). Manipulación, pedagogía y cultura política en la prensa colombiana. *Revista Virtual Universidad Católica del Norte*. Año 2013. Número 38, Febrero-Mayo. Colombia.

Yanes Mesa, R. (2004). El artículo, un género entre la opinión y la actualidad. *Revista Latina de Comunicación Social,* 58, La Laguna (Tenerife). Recovered on December 2, 2016 of:
http://www.ull.es/publicaciones/latina/20041858yanes.htm

_____

4.1.2. Artículo II

Blasco-Duatis, M., Coenders, G., Sáez, M. (aceptado). Representación composicional (CoDa) de la agenda-setting de los opinantes sobre política en la prensa escrita española durante las Elecciones Generales de 2015. *Estudios sobre el Mensaje Periodístico*, 24, 2.

REPRESENTACIÓN COMPOSICIONAL (CoDa) DE LA AGENDA-SETTING DE LOS OPINANTES SOBRE POLÍTICA EN LA PRENSA ESCRITA ESPAÑOLA DURANTE LAS ELECCIONES GENERALES DE 2015

Compositional representation (CoDa) of the agenda-setting of the opinion makers on politics in the Spanish written press during the 2015 General Elections

Marc Blasco-Duatis[1], Germà Coenders[1,2], Marc Saez[1,2]

Resumen

Este articulo presenta y desarrolla un análisis composicional con representación de biplots como propuesta innovadora para un abordaje metodológico de representación de la teoría de la *agenda-setting* para la opinión sobre política en la prensa escrita. Para ello, se desarrolla un análisis de contenido de los artículos de opinión sobre política de los periódicos *El País*, *El Mundo*, *ABC*, *La Razón* y *La Vanguardia*, en el período de las Elecciones Generales españolas de 2015, para posteriormente aplicar el método composicional como procedimiento que permite representar la teoría de la *agenda-setting*, teniendo en cuenta la proporcionalidad de la presencia de los temas y superando los tradicionales métodos correlacionales. Los resultados prueban la viabilidad metodológica, a la vez que aportan una visión hasta el momento inexplorada sobre la *agenda-setting* en el caso en estudio.

Palabras clave: *agenda-setting, análisis composicional, biplot, opinión política, prensa escrita.*

Abstract

This article presents and develops a compositional analysis with representation of biplots, as an innovative proposal for a methodological approach to representation the theory of the agenda-setting about the political opinion of the opinion makers in the written press. For this purpose, a content analysis of the opinion articles on politics is carried out of the newspapers *El País*, *El Mundo*, *ABC*, *La Razón* and *La Vanguardia* in the period of the Spanish general elections of 2015, to later apply the compositional method that allows representation the agenda setting theory, taking into account proportionality of topics and surpassing the traditional correlational methods. The results prove the methodological feasibility of the model, while providing an unexplored view on the case under study and shed light on the agenda-setting theory.

Key words: *agenda-setting, biplot, compositional data, political opinion, written press.*

Sumario

---

1. Introducción

La investigación que se presenta toma en consideración los fundamentos teóricos establecidos en torno a la teoría de la *agenda-setting* (AS), para desarrollar y aplicar el método composicional (CoDa) de representación de la misma. Por vía de un estudio de caso desarrollado anteriormente por los mismos firmantes (Blasco-Duatis et al., 2017), centrado en la opinión sobre política publicada en cinco rotativos españoles durante el período de las Elecciones Generales españolas de 2015, presenta las propiedades de diversos tipos de biplots composicionales, algunos de los cuales ya empiezan a ser aplicados en el campo de la comunicación (Blasco-Duatis et al., 2018a, 2018b).

Hoy en día resulta difícil imaginar nuestras vidas sin estar continuamente bombardeados por informaciones sobre guerras, cambios económicos, ataques terroristas y catástrofes que ocurren dentro y fuera de nuestros países. Basándose en las informaciones (sean noticias u opiniones), la gente hace juicios y adquiere un posicionamiento sobre el mundo que condicionará un estado de opinión en el conjunto de la ciudadanía. El auge y progresiva consolidación del género periodístico de la opinión en las sociedades occidentales, por vía de formatos como las tertulias televisivas y radiofónicas o los artículos de opinión en prensa, se ha constituido como una necesidad creciente en los principales sistemas mediáticos, ofreciendo voces avaladas para participar en el debate de las ideas y creencias sociales. Los medios de comunicación no desarrollan un papel únicamente informativo, sino que debemos considerar entre sus funciones también las de "encauzar, despertar y fomentar la formación de la opinión" (Abejón Mendoza, 2013). La sociedad, incapaz de experimentar en directo todos los eventos de forma global, requiere de explicación sobre dichos aconteceres que a su vez configuren estados de opinión (Lippmann, 1922). Desde la academia, los fundamentos de Lippmann marcaron los inicios del estudio de una de las líneas epistemológicas más definitorias de las ciencias de la comunicación: la teoría de la AS. La correlación entre los temas seleccionados por los medios de comunicación de masas para su tratamiento mediático y las preocupaciones del público, supusieron los inicios del estudio que incidiría sobre las dinámicas empleadas por parte de los medios, visibilizando que éstos no solamente ejercen como trasmisores de la información, sino que se postulan como filtros de aquellos temas que integrarán la agenda y, a su vez, definen el grado de atención que se establecerá sobre los mismos.

En este escenario la investigación se propone superar los estudios basados en frecuencias y en correlaciones de Pearson y Spearman para establecer las bases metodológicas que permitan, a la vez que representar la teoría de la AS (siguiendo la aplicación de biplots composicionales), fomentar una lectura basada en la proporcionalidad entre los emisores de información y los temas. Para ello, el trabajo toma como estudio de caso el periodo de las Elecciones Generales de España de 2015 y centra su análisis en los artículos de opinión sobre

política, publicados en los periódicos de información generalista y de tirada estatal *El País*, *El Mundo*, *ABC*, *La Razón* y *La Vanguardia*.

Es por esto que el presente artículo se estructura bajo una breve contextualización teórica de la AS en el marco del género de opinión en la prensa escrita, para dar paso a una exposición del tradicional procedimiento de análisis de categorías de contenidos en los medios. Sigue una detallada exposición metodológica de los fundamentos del análisis composicional (CoDa) y los diversos CoDa-biplots, acompañada del detallado análisis de contenido que se expone como caso de estudio. Finalmente se presentan los resultados de la aplicación composicional, para dar paso a un último capítulo de principales conclusiones.

2. *Agenda-setting*, género periodístico de opinión y prensa escrita

Los orígenes de la teoría de la AS se remontan a los inicios del siglo XX con la publicación pionera de la investigación *Public Opinion* (1922) de Walter Lippmann, considerado el padre intelectual de la AS (McCombs, 2006: 26). La influencia de los medios sobre la gente y su relación con los hechos reales centraron las investigaciones de Lippman, constatando por un lado que los medios definen el mapa cognitivo de la sociedad sobre su experiencia con el mundo en el que viven y, por otro lado, que los medios son generadores de un "pseudo-entorno" informativo creado por las noticias e independiente de la realidad de los hechos. Estos primeros estudios empíricos encontraron en los medios masivos la capacidad de influir sobre una masa pasiva, y en ellos se afirmaba que la propaganda mediática lograba a través de la manipulación la adhesión de la ciudadanía a determinados planes políticos.

La complejidad del acontecer social sometido a una precipitación informativa permanente, ha desbordado la representación que la sociedad puede hacerse de aquello que le rodea. Ante esta insuficiencia para imponer la realidad a un control exhaustivo, los medios de comunicación de masas ejercen el cometido de establecer el vínculo entre los individuos y el mundo, ofreciendo "una realidad de segunda mano, que viene estructurada por las informaciones que dan los periodistas de esos hechos y situaciones" (McCombs, 2006: 24). En este contexto, los medios establecen una cobertura mediática que pasa por incluir u omitir determinados hechos según se les otorgue mayor o menor jerarquía, y que según Fishman (1983) "condiciona la experiencia de la gente sobre su entorno más allá de sus propias vivencias". Asimismo, la relevancia de determinados temas en consonancia con las preocupaciones del público, pretende lograr que éste focalice en ellos su atención, pensamiento y acciones, confiriendo así el primer nivel en la formación de la opinión pública, donde la gente percibe que "los acontecimientos que más cobertura reciben son los más importantes" (Igartua y Humanes, 2004: 244).

En esta línea, la teoría de la AS fundamentó –en un primer nivel– la idea que existe una fuerte correlación entre el énfasis que los medios de comunicación de masas otorgan a ciertas cuestiones y la importancia que las audiencias les atribuyen (Cohen, 1963; McCombs & Shaw, 1972). Así, las inquietudes de los teóricos de la AS se fundamentaron desde sus inicios en probar que los medios no solamente son transmisores de la información, sino que ejercen como filtro de aquellos temas que integrarán la agenda y, a su vez, definirán la atención que se establecerá sobre un tema concreto en un mismo periodo.

Precisamente el "aquello" sobre lo que la sociedad debe pensar y construir una opinión, en la AS cobra especial importancia y hace referencia a los temas. Su interés, como elemento central en el estudio teórico de la construcción de la AS, ha llevado a numerosos teóricos a

fundamentar sus estudios en la génesis del concepto (Luhmann, 1973; Shaw et al., 1977; Lang y Lang, 1966; Dearing y Rogers, 1996; McCombs, 2006; Sábada, 2008). Como resultado, todos ellos apuntan que la importancia de la agenda se define desde la jerarquización informativa de los temas que son sometidos al interés de los medios y trasladados al público. La presencia o ausencia de un tema en la agenda marcará la prioridad de intereses y conferirá una esfera de preferencias sobre lo que es sometido al debate público. En esta línea, Wolf (1991) propone abordar esta magnitud de los temas como un procedimiento implícito en el ejercicio informativo y desde la perspectiva de la tematización, concepto fundamentado por Luhmann (1973) desde el campo de la sociología. En este ejercicio, el tema "priorizado" será incorporado en la agenda y en un contexto de notoriedad que, en palabras de Marletti (1982: 210) convertirá "una información tematizada en una noticia mediática".

El modelo de la AS ha resultado ser el que ha explicado con más éxito los efectos producidos por los medios de comunicación de masas en sus relaciones con la opinión pública. De ahí que resulte de especial importancia constatar que, sea o no manifiesto el mecanismo por el cual se determina la construcción de la agenda, los medios de comunicación de masas son unos instrumentos extremadamente poderosos en la configuración de la mentalidad dominante de las sociedades contemporáneas.

Asimismo, las nuevas dinámicas de relación entre los medios y la audiencia, propiciadas por un mayor pluralismo en la esfera mediática, han supuesto la reconfiguración del modelo tradicional de la comunicación política en un escenario que otorga al público un mayor protagonismo, y que postula a nuevos intermediarios que se erigen como líderes de opinión (Mazzoleni, 1998). Hoy encontramos una creciente interpelación de los espacios de opinión en unos medios de comunicación que tienden cada vez más a decir a sus audiencias "sobre qué pensar y no sobre el qué pensar" (Cohen, 1963). En este orden, el mismo Van Dijk (2010) reflexionaba sobre el entramado de interrelaciones culturales, sociales, estéticas y técnicas que supone la prensa, cuando afirmaba que "los periódicos infieren en la construcción de la cultura política de los países siendo piezas en un permanente dinamismo dentro de la industria cultural". En este sentido, hoy resulta indispensable diferenciar los géneros periodísticos entre aquellos que dan a conocer hechos que utilizan la forma expositiva, descriptiva y narrativa, de los que dan a conocer ideas, que usan fundamentalmente la forma argumentativa (Moreno Espinosa, 2003). En nuestro estudio nos concentramos en el segundo grupo, donde Martin Vivaldi (1981) proponía una definición que creemos completa, cuando se refería a las columnas de opinión en la prensa escrita como un "escrito de muy vario y amplio contenido, de varia y muy diversa forma, en el que se interpreta, valora o explica un hecho o una idea actual, de especial trascendencia, según la convicción del articulista".

En el auge y la consolidación del género periodístico de la opinión, que se expande en múltiples medios y formatos del sistema mediático español, el opinante[2] se ha convertido en figura indispensable para entender los medios de comunicación de masas y concretamente el desempeño de la labor periodística. Autorizados por su visión experta, por su repercusión mediática o por su pericia profesional, ocupan un terreno cada vez mayor en la prensa escrita,

---

[2] Entendemos por opinantes el conjunto de actores que participan manifestando una idea u opinión, invitados por los medios de comunicación masivos en el contexto del debate mediático (especialmente en espacios de tertulia televisiva o radiofónica, así como en el ejercicio de columnista en la prensa escrita).

que ha sido, y sigue siendo, un espacio clave para "encauzar, despertar y fomentar la formación de la opinión" (Abejón Mendoza, 2013).

En definitiva, la investigación recoge los fundamentos de la teoría de la AS –así como la epistemología del género periodístico de la opinión– en aras de vehicular la representación composicional del establecimiento de la AS por parte de los principales rotativos españoles en el periodo de las Elecciones Generales de 2015. Debido a la singularidad de la propuesta, no solamente por representar la AS de la opinión sobre política de los principales rotativos españoles, sino por fundamentarlo en un marco metodológico todavía poco explorado en este campo (Blasco-Duatis et al., 2018a, 2018b), conviene tomar en especial consideración la evolución de un enfoque tradicional para el análisis de categorías de contenido en los medios –hasta el momento basado en frecuencias y correlaciones– a una propuesta composicional que prioriza las diferencias relativas entre emisores y categorías de contenido. Lo desarrollamos a continuación.

3. Enfoque tradicional para el análisis de categorías de contenido en los medios

Como hemos visto hasta ahora, en la naturaleza de la teoría de la AS el análisis de los contenidos generalmente se enfoca en la importancia relativa o comparativa de algunos contenidos sobre otros. Se supone que algunos medios o actores sociales están más ocupados que otros en determinados temas, lo que lleva a un estudio general del volumen relativo de información sobre los temas, en detrimento de los volúmenes absolutos (Blasco-Duatis et al., 2018a, 2018b). En la mayoría de los casos se evidencia en la formulación de hipótesis y preguntas de investigación, expresadas en términos comparativos, relativos o competitivos. Los ejemplos literales de preguntas de investigación que aluden claramente al enfoque comparativo –sobre el establecimiento de la agenda en distintos medios– son abundantes: "Descubrir el tratamiento informativo y *grado de importancia* que la prensa escrita española ofreció a nivel de cobertura al proceso oficial de la campaña electoral" (Del Orbe Ayala, 2013: 590) "vislumbrar la frecuencia con la que los principales matutinos del país incluyeron noticias referidas al proceso de estatización de YPF en las portadas; establecer la *jerarquía* que cada uno de los diarios le otorgó a este issue" (Koziner y Zunino, 2013: 2), "¿Cuáles son los temas *destacados* en la agenda pública, la agenda de los medios y la agenda política?" (Luo, 2014: 1293), "El incidente MH370 *dominó* rápidamente la agenda de noticias en muchos países" (Cui y Wu, 2017: 2), "analiza y *compara* la cobertura informativa otorgada por dos destacados periódicos, relativa a dos casos de corrupción ocurridos en Portugal (Caso Freeport en Diário de Notícias) y España (Caso Palma Arena en El País)" (Ferin Cunha, et al. 2015: 29), "La suposición de que los medios de comunicación *enfatizan* y *resaltan* ciertos eventos" (Weimann-Saks et al., 2016: 730), "¿Cuáles fueron los atributos *más importantes* de la guerra de Irak en la cobertura periodística de Estados Unidos, China continental, Taiwán y Polonia?" (Guo et al., 2015: 349), "correspondencia entre dos de los temas más mencionados en las encuestas y dos de los temas *predominantes* obtenidos mediante el análisis de contenido" (Garza Alanis, 2013: 793), "¿Cómo funcionaron las diferencias de noticias en el agendamiento de la primera página del Sunday Times y Rapport, con respecto a sus historias *principales*?" (Naudé y Froneman, 2003: 87), "¿Cuáles fueron los temas de política *más frecuentes* (agenda de temas) discutidos por los medios con respecto a cada nación?" (Besova y Cooley, 2009: 225). La cursiva es nuestra.

La forma más simple de evaluar la similitud entre los emisores de información política según la importancia relativa de las categorías de contenido que proyectan (temas), y determinar qué categorías de contenido contribuyen a su diferencia, es comparar las frecuencias de sus

contenidos principales (p.ej., Blasco-Duatis et al., 2017; Garza Alanis, 2013; Guo et al., 2015; Jungherr et al., 2016).

La *Tabla 1* muestra datos ficticios en 6 emisores (E1 a E6) y sus 3 frecuencias de contenido principales (C1 a C5). En aras de la simplicidad, evaluamos solo la similitud de E1 con todos los demás emisores. Para todos los efectos, E2 parece idéntico a E1, aunque la forma en que se presentan los datos en términos absolutos hace que sea difícil verlo a primera vista. E3 también parece idéntico a E1. En E4 y E5, las dos primeras categorías son como en E1, pero difieren en el tercer contenido, mientras que no hay nada que indique si uno u otro son más diferentes de E1. E6 tiene los mismos tres temas principales que E1, aunque con diferentes frecuencias. Una cuestión clave que confunde la interpretación de dicha tabla es que los diferentes emisores se comparan sobre la base de un conjunto diferente de temas. En otras palabras, no conocemos las frecuencias de los temas omitidos, que pueden estar justo por debajo de la frecuencia del tercer tema, o pueden tener una frecuencia completamente insustancial.

Tabla 1: Comparación ficticia top3 de 6 emisores en las categorías de contenido C1 a C5 basadas en frecuencia absoluta

	E1	E2	E3	E4	E5	E6
Primero	C1-150	C1-50	C1-150	C1-150	C1-150	C1-185
Segundo	C2-90	C2-30	C2-90	C2-90	C2-90	C3-60
Tercero	C3-60	C3-20	C3-60	C5-60	C4-60	C2-55

Fuente: *Elaboración propia.*

La parte superior de la *Tabla 2* muestra la comparación de los 6 emisores según el conjunto completo de categorías de contenido que aparecen en la lista de los tres primeros de al menos un emisor. De esta forma, nos aseguramos de que las comparaciones mutuas entre los remitentes se realicen de forma común. Para facilitar la interpretación, la parte central de la tabla contiene proporciones en lugar de frecuencias absolutas. Algunos autores prefieren utilizar rangos (p.ej. Besova y Cooley, 2009; Cui y Wu, 2017; Lim, 2011; Ragas y Kiousis, 2010), como se muestra en la parte inferior de la tabla.

Tabla 2: Comparación total ficticia de 6 emisores en las categorías de contenido C1 a C5 basadas en frecuencias absolutas (arriba), frecuencias relativas (centro) y rangos (abajo)

	E1	E2	E3	E4	E5	E6
C1	150	50	150	150	150	185
C2	90	30	90	90	90	55
C3	60	20	60	50	50	60
C4	45	15	10	10	60	45
C5	15	5	50	60	10	15
C1	0,417	0,417	0,417	0,417	0,417	0,514
C2	0,250	0,250	0,250	0,250	0,250	0,153
C3	0,167	0,167	0,167	0,139	0,139	0,167
C4	0,125	0,125	0,028	0,028	0,167	0,125
C5	0,042	0,042	0,139	0,167	0,028	0,042
C1	1	1	1	1	1	1
C2	2	2	2	2	2	3
C3	3	3	3	4	4	2
C4	4	4	5	5	3	4
C5	5	5	4	3	5	5

Fuente: *Elaboración propia.*

De la segunda parte de la *Tabla 2* se desprende que el emisor 2 es idéntico al emisor 1. Por el contrario, el emisor 3 es marcadamente diferente. En comparación con el emisor 1, el emisor 3 tiene un aumento de tres veces en C5 (0,139 / 0,042 = 3,33), y en comparación con el emisor 3, el emisor 1 tiene un aumento cuádruple en C4 (0,125 / 0,018 = 4,50).

También resulta evidente que el emisor 4 es más diferente del emisor 1 que el emisor 5. Comparado con el emisor 1, el emisor 4 tiene un aumento cuádruple en C5 (0,167 / 0,042 = 4,00) y comparado con el emisor 4, el emisor 1 multiplica por cuatro en C4 (0,125 / 0,028 = 4,50).

Con respecto al emisor 6, las diferencias con respecto al emisor 1 parecen grandes en términos absolutos, pero no tanto en términos relativos, porque ocurren en categorías de contenido que tienen altas proporciones en ambos remitentes (0,514 / 0,417 = 1,23 y 0,250 / 0,153 = 1,64). Por tanto, si las preguntas de investigación se centran en la importancia relativa de los contenidos, esto debe tenerse debidamente en cuenta al analizar los datos.

Mientras que la segunda parte de la *Tabla 2* puede constituir un foco de análisis sólido y en muchos casos se usan tablas similares (p.ej. Blasco-Duatis et al., 2017; Del Orbe Ayala, 2013; Frederick et al., 2015; Luo, 2014; Min, 2004; Naudé & Froneman, 2003; Rogstad, 2016; Rubio-García, 2014), existe una falta general de preocupación sobre cómo las categorías de contenido contribuyen a generar diferencias entre los emisores, ya sean relativas o absolutas.

Tales diferencias (o similitudes) a menudo se evalúan por medio de las correlaciones por rangos de Spearman entre los emisores sobre la base de la parte inferior de la *Tabla 2* (p.ej. Conway et al., 2015; Cui y Wu, 2017; Lim, 2011; Luo, 2014; Ragas & Kiousis, 2010; Weimann-Saks et al., 2016) o por medio de otros tipos de correlación por rangos (Min, 2004). Esto es equivalente a no tener en cuenta las diferencias relativas o absolutas, sino solo el orden jerárquico y, por lo tanto, desperdiciar cualquier otra información, al tiempo que no está claro qué contenidos contribuyen a la correlación o a su ausencia. Por ejemplo, según las

correlaciones de Spearman en la parte superior de la *Tabla 3*, el emisor 3 es tan similar al emisor 2 como al emisor 4. Las correlaciones de Pearson utilizadas por Besova y Cooley (2009) y Sweetser et al. (2008) en algunos aspectos empeoraron las cosas. Dichas correlaciones se centran en las diferencias absolutas en lugar de las relativas, y los temas de consenso pueden actuar como valores atípicos al inflar todas las correlaciones al alza (parte inferior de la *Tabla 3*). A veces se usan las pruebas χ^2 en tablas de contingencia para revelar la existencia de diferencias entre los remitentes, pero son incluso menos informativas, ya que no dicen nada sobre el alcance de estas diferencias (p.ej. Frederick et al., 2015; Naudé y Froneman, 2003).

Tabla 3. Correlaciones por rangos de Spearman (arriba) y correlaciones de Pearson (abajo)

	E1	E2	E3	E4	E5	E6
E1	1.000	1.000	.900	.700	.900	.900
E2	1.000	1.000	.900	.700	.900	.900
E3	.900	.900	1.000	.900	.700	.800
E4	.700	.700	.900	1.000	.600	.500
E5	.900	.900	.700	.600	1.000	.700
E6	.900	.900	.800	.500	.700	1.000
E1	1.000	1.000	0.886	0.844	0.984	0.939
E2	1.000	1.000	0.886	0.844	0.984	0.939
E3	0.886	0.886	1.000	0.991	0.807	0.847
E4	0.844	0.844	0.991	1.000	0.770	0.814
E5	0.984	0.984	0.807	0.770	1.000	0.924
E6	0.939	0.939	0.847	0.814	0.924	1.000

Fuente: *Elaboración propia.*

En la siguiente sección presentamos la herramienta CoDa-biplot que resuelve estos problemas en el estudio de las diferencias relativas, enfocándonos apropiadamente en la información aportada según sus diferencias relativas en lugar de absolutas, y lo hace de forma gráfica y visual.

4. Método

Para alcanzar la representación de la AS de la opinión sobre política en los periódicos españoles seleccionados, y dentro del periodo de las Elecciones Generales en España de 2015, empleamos una metodología mixta basada en el análisis de contenido (Berelson, 1952; Krippendorff, 1990; Wimmer et al., 2006) al servicio del análisis composicional (CoDa) y por vía de la representación de biplots. A continuación, describimos los principales extremos y propiedades de cada uno de los procedimientos.

4.1. Análisis composicional (CoDa)

La representación gráfica biplot que propone el método composicional (CoDa) está pensada para disponer de forma conjunta la proporcionalidad de dos tipos de información con la finalidad principal de reducir la complejidad en su fase interpretativa. En nuestro caso, esta información hace referencia a los temas (componentes) y a los periódicos (composiciones) que se representan. Como hemos comentado, la importancia relativa de los contenidos, es decir sus proporciones, son nucleares en el interés del análisis, puesto que se da por sentado que periódicos o documentos más largos o emisores más activos tienen más contenidos de

todo tipo. El análisis de dichas proporciones plantea importantes retos a la estadística como veremos más abajo (Aitchison, 1986; Pawlowsky-Glahn y Buccianti, 2011; Pawlowsky-Glahn, Egozcue y Tolosana-Delgado, 2015). La solución a estos retos ha preocupado tradicionalmente a disciplinas como la geología, la química, o la biomedicina. En los análisis químicos, biológicos, y geológicos el tamaño de la muestra química, del tejido biológico o de la roca analizados son genuinamente irrelevantes para las conclusiones. Sí interesa la importancia relativa de los componentes revelados por el análisis, que se suele expresar en concentraciones, porcentajes por peso o volumen, partes por millón, etc. En estos campos se ha venido desarrollando la metodología de *análisis de datos composicionales* para resolver dichos retos. El interés por esta metodología ha ido creciendo, coincidiendo con la aparición de los primeros libros de texto y artículos verdaderamente divulgativos (Van den Boogaart y Tolosana-Delgado, 2013; Egozcue y Pawlowsky-Glahn, 2016; Pawlowsky-Glahn, Egozcue y Tolosana-Delgado, 2015), que ofrecen un surtido de herramientas estandarizadas, de las más simples a las más complejas. Ello ha propiciado la extensión del uso de la metodología a las ciencias sociales (e.g., Batista-Foguet, Ferrer-Rosell, Serlavós, Coenders y Boyatzis, 2015; Brown, 2016; Coenders, Hlebec y Kogovsek, 2011; van Eijnatten, van der Ark y Holloway, 2015; Hlebec, Kogovšek y Coenders, 2012; Kogovšek, Coenders y Hlebec, 2013; Mateu-Figueras, Daunis-i-Estadella, Coenders, Ferrer-Rosell, Serlavós y Batista-Foguet, 2016; Vives-Mestres, Martín-Fernández y Kenett, 2016), aunque su aplicación al análisis de contenido de la comunicación aún sea poco frecuente (Blasco-Duatis et al., 2018a, 2018b), limitada a un solo tipo de biplots y sin profundizar en las propiedades estadísticas del método, limitaciones que este artículo se propone resolver.

4.1.1. Datos composicionales y su análisis

El *análisis de datos composicionales* (Aitchison, 1982; 1986) se define como el análisis de las partes de un todo cuando interesa el tamaño relativo de sus D elementos o *componentes*. Sea **x** un vector en el ortante real positivo R_+^D:

(1)

$$\mathbf{x} = \left(x_1\ x_2\ ...x_D \right) \in IR_+^D\ ,\ \text{con}\ \ x_j > 0,\ j = 1, 2, ..., D,$$

z es el mismo vector una vez ha sido *cerrado* o *clausurado* a una suma fija (normalmente igual a 1 o a 100), dividiendo por la suma original *S*. Esta operación se hace habitualmente, a fin de eliminar el efecto del tamaño. En adelante supondremos sin pérdida de generalidad que la clausura se hace a suma unitaria.

(2)

$$\mathbf{z} = C(\mathbf{x}) = \left(\frac{x_1}{S}\ \frac{x_2}{S}\ ...\ \frac{x_D}{S} \right) = \left(z_1\ z_2\ ...\ z_D \right)$$

$$\text{con}\ z_j > 0,\ j = 1, 2, ..., D;\quad S = \sum_{j=1}^{D} x_j;\ \sum_{j=1}^{D} z_j = 1.$$

En nuestro caso, cada emisor de contenidos de comunicación política (el periódico) tendría una composición formada por los D temas identificados durante el análisis de contenido, expresados en tanto por uno. Independientemente del valor de la suma fija, o incluso independientemente de que la clausura llegue a realizarse, la información composicional es la misma, lo que se denomina principio de equivalencia composicional (Barceló-Vidal y Martín-Fernández, 2016).

z reside en un subespacio acotado por la restricción de suma fija, en R_+^{D-1}, llamado *simplex*. Las amenazas de aplicar técnicas estadísticas clásicas sobre **z** fueron ya identificadas por Pearson (1897) en forma de *correlaciones espurias* negativas: aumentar un componente sólo es posible si al menos algún otro se reduce en su lugar.

Más recientemente, Aitchison (1986), Barceló-Vidal y Martín-Fernández (2016), Pawlowsky-Glahn y Egozcue (2001) y Egozcue y Pawlowsky-Glahn, (2011) han puesto énfasis en el *espacio acotado* del simplex (la mayoría de los análisis estadísticos basados, por ejemplo, en distribuciones no acotadas como la normal, asumen datos susceptibles de variar entre menos infinito y más infinito), y su geometría regida por unas distancias distintas a las habituales. La distancia euclidiana, por ejemplo, supone que el paso de un componente de 0,01 a 0,02 representa la misma diferencia que el paso de 0,11 a 0,12. Más lógico sería considerarlo equivalente al paso de 0,11 a 0,22, puesto que en términos relativos se trata en ambos casos de duplicar el valor inicial.

Existen diversas soluciones a los mencionados problemas, las más sencillas de las cuales pasan por el cálculo de logaritmos de cocientes entre los componentes o entre sus medias geométricas. Dichos logaritmos de cocientes intervienen tanto en el cálculo de las relaciones entre componentes, como en la transformación del simplex en un espacio no acotado, como en la definición de distancia.

En lo que respecta a las correlaciones, se recomienda prescindir de ellas y substituirlas por el concepto de *proporcionalidad*. Si dos partes j y k se mueven de forma proporcional, su cociente se mantiene constante y el logaritmo de su cociente tiene varianza cero.

(3)

$$\mathrm{Var}(\ln(x_j/x_k))=0$$

La matriz de correlaciones se substituye por la llamada *matriz de variación*, que contiene dichas varianzas de logaritmos de cocientes calculadas para todas las posibles parejas de componentes $j=1,2,...,D$; $k=1,2,...,D$. Igual que la matriz de correlaciones es simétrica. El valor cero, como se ha comentado, implica asociación perfecta directa entre dos componentes. No hay, en cambio, una cota superior que indique asociación perfecta inversa. Valores altos de la varianza indican que los dos componentes no varían proporcionalmente (Egozcue y Pawlowsky-Glahn, 2011; Lovell et al., 2015).

En lo que respecta al espacio acotado, las transformaciones por logaritmos de cocientes entre componentes o sus medias geométricas, llevan a unos datos transformados que varían libremente entre menos infinito y más infinito. Otro aspecto interesante es que tanto los logaritmos, como los cocientes, como las medias geométricas, son operaciones matemáticas que ponen de relieve el tamaño relativo de las magnitudes en lugar del tamaño absoluto. Existen diversas transformaciones alternativas (Egozcue, Pawlowsky-Glahn, Mateu-Figueras y Barceló-Vidal, 2003) de las cuales, una de las más sencillas es la *transformación log-cociente centrada (clr):*

(4)

$$clr(\mathbf{z})=\left(\ln\left(\frac{z_1}{\sqrt[D]{z_1 z_2 ... z_D}} \right) \quad \ln\left(\frac{z_2}{\sqrt[D]{z_1 z_2 ... z_D}} \right) \quad ... \quad \ln\left(\frac{z_D}{\sqrt[D]{z_1 z_2 ... z_D}} \right) \right)$$

Cada log-cociente se interpreta como la importancia relativa de uno de los componentes, cuando se compara con la media geométrica de todos ellos.

De particular interés es la distancia entre dos composiciones **z** y **z***, llamada *distancia de Aitchison*, cuya formulación en términos de diferencias entre log-cocientes, pone de manifiesto que captura diferencias relativas y no absolutas.

(5)

$$d\left(\mathbf{z}, \mathbf{z}^*\right) = \sqrt{\sum_{j=1}^{D}\left(\ln\left(\frac{z_j}{\sqrt[D]{z_1 z_2 ... z_D}}\right) - \ln\left(\frac{z_j^*}{\sqrt[D]{z_1^* z_2^* ... z_D^*}}\right)\right)^2}$$

Aunque se hayan desarrollado técnicas y software específicos para el análisis composicional (v.g., Monti, Mateu-Figueras y Pawlowsky-Glahn, 2011; Palarea-Albaladejo y Martín-Fernández, 2015; Thió-Henestrosa y Martín-Fernández, 2005; Van den Boogaart y Tolosana-Delgado, 2013) el empleo de técnicas existentes con software estándar sobre los datos transformados por medio de log-cocientes también es habitual (Mateu-Figueras, Pawlowsky-Glahn y Egozcue, 2011) y muy atractivo para los investigadores aplicados (Ferrer-Rosell, Coenders y Martínez-Garcia, 2015, 2016). En efecto, la distancia euclidiana calculada sobre la transformación log-cociente centrada equivale a la distancia de Aitchison (Aitchison, Barceló-Vidal, Martín-Fernández y Pawlowsky-Glahn, 2000). Así, en el *biplot composicional* que nos ocupa, el análisis puede realizarse con métodos y programas informáticos estándar después de calcular los log-cocientes centrados.

4.1.2. Biplot composicional

Igual como ocurre con el análisis estadístico clásico, el análisis de datos composicionales requiere herramientas gráficas de visualización de datos que permitan captar las características esenciales de una composición cuando ésta está formada por muchos individuos (emisores, en nuestro caso periódicos) o por muchos componentes (contenidos, en nuestro caso temas de la AS). Una herramienta muy útil es el biplot composicional (Aitchison y Greenacre, 2002). Se trata del mismo biplot estándar resultante del *análisis en componentes principales* basado en la matiz de covarianzas de los datos transformados con log-cocientes centrados (Aitchison, 1983). El biplot de un análisis en componentes principales representa conjuntamente las variables originales (en este caso los D contenidos o temas sometidos a la transformación *clr*) y los individuos (en este caso los periódicos), sobre las dos primeras dimensiones del análisis en componentes principales. Las variables se suelen representar como vectores con origen en el centro de coordenadas, y los individuos como puntos. El biplot constituye la mejor aproximación posible de los datos originales en dos dimensiones. La calidad de esta aproximación viene indicada por el porcentaje de varianza explicada por dichas dos primeras dimensiones.

Aunque el procedimiento de análisis en componentes principales y el trazado del biplot son estándar, no lo es su interpretación. Se prescinde de las correlaciones entre contenidos (en las que en cambio se fija el biplot clásico, que las define a partir del ángulo que forman los vectores-variable).

Existen dos tipos de biplot cuyas interpretaciones difieren y se complementan:

En el *biplot de covarianza* el principal elemento de interpretación son las *distancias entre los extremos de los vectores-tema*. Dicha distancia es aproximadamente proporcional a la desviación típica del logaritmo del cociente entre los dos temas implicados, en otras palabras,

la raíz cuadrada de (3). Extremos de los vectores próximos entre sí indican temas que guardan una proporcionalidad aproximada, en el sentido, por ejemplo, de parejas de temas tales que si se dobla la proporción de uno en un determinado periódico, también se dobla la proporción del otro. Extremos alejados indican lo contrario, en el sentido, por ejemplo, de parejas de temas tales que si aumenta la proporción de uno en un determinado periódico, disminuye la proporción del otro.

En el *biplot de forma* las *distancias entre periódicos* constituyen aproximaciones de sus distancias de Aitchison. Dos periódicos próximos entre si emiten composiciones de contenidos o temas parecidas. Un periódico con poca distancia al centro de coordenadas emite una composición de contenidos aproximadamente igual al promedio geométrico de las composiciones de todos los periódicos. Otro elemento interpretativo son las longitudes o *módulos de los vectores-tema*. A mayor longitud, mejor explicado o aproximado está el tema en el espacio de las dos primeras dimensiones del análisis en componentes principales.

Cualquiera de los dos biplots permite visualizar la importancia aproximada de cada tema para cada periódico, en términos relativos. Si *proyectamos los periódicos ortogonalmente* (los dejamos caer formando un ángulo de 90 grados sobre la dirección definida por cada vector-tema), el sentido indicado por el vector-tema señala hacia los periódicos con un mayor contenido relativo de dicho tema, identificándose así que temas contribuyen a distinguir cada periódico de los demás.

4.1.3. Tratamiento de los ceros

Cuando los datos contienen ceros (en nuestro caso, temas poco recurrentes en los rotativos u opinantes que hablan poco o nada de determinadas cuestiones) los log-cocientes no se pueden calcular, con lo que se hace necesario algún tratamiento de los ceros previo al análisis (Martín-Fernández, Palarea-Albaladejo y Olea, 2011). Un caso muy habitual son los llamados *ceros de redondeo, ceros de traza, o ceros bajo el límite de detección*. Se trata de componentes que están o podrían estar presentes, pero son demasiado pequeños para ser observados. Este caso forma parte del mismo problema estadístico que los *datos ausentes*, con el conocimiento adicional de que son valores pequeños. La aproximación habitual es reemplazarlos de un modo u otro por un valor inferior a los valores más pequeños observados.

Un caso parecido son los llamados *ceros de recuento*, que se manifiestan cuando el vector **x** contiene recuentos de sucesos, como en nuestro caso: recuento de veces que se encuentra un contenido (tema de la AS) dentro de un emisor (periódico). En este caso, el vector **z** puede entenderse como la estimación de los parámetros de una *distribución multinomial*. Este planteamiento permite usar métodos bayesianos (Pierotti, Martín-Fernández y Seehausen, 2009). Diversos priores son posibles. El experimento de Monte Carlo de Martín-Fernández, Hron, Templ, Filzmoser y Palarea-Albaladejo (2015) conduce a recomendar la solución de Bayes-Laplace entre las que usan priores no informativos. Algunos métodos con priores informativos son superiores, pero requieren software especializado para su aplicación. El *reemplazamiento de Bayes y Laplace con prior no informativo* substituye los valores iguales a cero para un periódico en el tema *j*-ésimo $z_j = 0$ por:

(6)

$$z'_j = \frac{1}{S+D}, \text{ para } z_j = 0,$$

donde *S* es la suma de los recuentos del periódico (en nuestro caso el número total de apariciones de todos los temas en el periódico) y *D* es el número de temas identificados en la AS.

A continuación, los valores positivos deben reducirse para preservar la suma unitaria. Martín-Fernández, Barceló-Vidal y Pawlowsky-Glahn (2003) proponen el método que llaman *reemplazamiento multiplicativo*:

$$z'_j = z_j \left(1 - \sum_{z_j = 0} z'_j \right), \text{ para } z_j > 0. \tag{7}$$

4.2. Análisis de contenido

En relación al análisis de contenido, el estudio da continuidad a la investigación Blasco-Duatis *et. al.* (2017). Así, tomamos como punto de partida –para el posterior análisis composicional– los datos del análisis de contenido del conjunto de artículos de opinión sobre política publicados por los periódicos *El País, El Mundo, La Vanguardia, ABC* y *La Razón*, en el periodo del 4 noviembre de 2015 al 4 de enero de 2016 (los quince días anteriores y posteriores a las Elecciones Generales Españolas del 20-D de 2015). En esta línea, las acotaciones metodológicas que se siguieron en el desarrollo del análisis de contenido se definen por:

i) El contexto temporal de estudio se centra en el periodo Elecciones Generales en España del año 2015. Concretamente los 30 días comprendidos desde el inicio de la campaña electoral el día 4 de diciembre de 2015 hasta el 4 de enero de 2016. Es decir, los quince días anteriores y posteriores al día de las elecciones (20 de diciembre de 2015). De este modo se obtiene un equilibrio entre el análisis de las fechas de campaña electoral y post-electoral. Descartamos del análisis la fecha de la jornada electoral, que sigue criterios de publicación distintos en los rotativos por la excepcionalidad de la fecha.

ii) El estudio se ha centrado en el análisis de las cinco cabeceras *El País, El Mundo, La Vanguardia, ABC* y *La Razón*. Se aborda la diagnosis de todos los artículos de opinión sobre temática política. Las cabeceras se han seleccionado siguiendo el Estudio General de Medios (octubre de 2015 a mayo de 2016[3]) y tomando como referencia aquellos cinco primeros medios impresos de información generalista y con cobertura integrada en todo el Estado español. Asimismo, se han contrastado con los datos de la plataforma O.J.D. en el período analizado (Oficina de Justificación de la Difusión) para mayor fiabilidad de la elección y con un resultado coincidente. Además, estos cinco periódicos "trazan un arco, que iría desde *El País* hasta *ABC*, que prácticamente abarca todas las opciones ideológicas con representación política en nuestro país" (López García 2004:15).

iii) Los artículos se han analizado desde su versión impresa porque resultaba más fiable poder contrastar, en su conjunto, todos los textos publicados y dirimir aquellos que se integraban en el género de la opinión política por su estructura formal y contenido. En este sentido se han

---

[3] Ranking de medios impresos período octubre 2015 – mayo 2016. Para mayor información acceder a http://www.aimc.es

recogido los artículos de opinión únicamente política que los periódicos impresos integran en las distintas secciones de sus ediciones (incluida la 'sección opinión'). Cabe apuntar que se ha desestimado la recopilación y análisis de los editoriales de las cabeceras en estudio ya que se consideró que no podíamos equiparar la opinión versada por el director del rotativo con la de los opinantes del medio. Los editoriales "se reservan el poder de traducir el lenguaje de los hechos noticiados en el medio, ininteligibles al no especializado, en términos de general comprensibilidad" (Moreno Espinosa, 2003), y por sus características "encierran una relación de diálogo con el Estado, aunque formalmente se dirijan a la opinión pública" (Marques de Melo, 1985).

iv) En relación al método de trabajo en el análisis de contenido, éste se ha basado en la indexación del conjunto de artículos de opinión en una base de datos donde se recopilaron los campos: fecha de publicación del artículo, nombre y apellidos del articulista autor del texto, título del mismo, cabecera donde aparece publicado, página donde se ubica el artículo, temática del texto y, finalmente, la ubicación en la sección del periódico. Con todo, y para el presente artículo, toma especialmente relevancia el campo "temática", ya que constituye la codificación necesaria para la posterior representación de la AS a través del análisis composicional. En esta línea, la codificación está realizada de forma manual, con un codificador y teniendo en cuenta el conjunto de temas que se tratan en cada pieza. La necesidad de comprender desde una perspectiva global los contenidos propuestos en cada artículo nos han llevado a desestimar otros métodos, como puede ser la minería de textos. Si bien en algunos casos se puede asociar un contenido con una(s) determinada(s) palabra(s) clave fácil de detectar por minería de textos (ej., terrorismo), en otros no es así (ej., constitución, que según el contexto podría referirse a su cumplimiento –en el marco del proceso catalán– o a su reforma). Por ello, confeccionamos una tabla de una (mínimo) a seis (máximo) palabras clave que describen los temas tratados en cada artículo, identificando hasta un total de 264 temas asociados al conjunto de piezas analizadas. Por similitud conceptual los agrupamos en 34 grandes categorías, de las cuales seleccionamos únicamente las 17 con suficiente entidad representativa (de ahora en adelante, top17): **(1) pactos** (política de pactos entre partidos, diálogo, entendimiento, formación de gobierno, el gran pacto de coalición PP-PSOE, a favor de un pacto nacional PP-PSO-C's, pacto C's-PSOE, gobierno desde el centro, de la presidencia del Congreso,…); **(2) proceso catalán** (contra el nacionalismo/separatismo catalán, soberanía del conjunto de la nación española, a favor de la unidad de España, conservadurismo y contra el derecho a decidir de Cataluña, política cultural catalana, dificultades de formación de gobierno autonómico en Cataluña, a favor de un referéndum pactado y legal en Catalunya,…); **(3) desigualdad y violencia de género** (sobre los comentarios machistas de determinados políticos, propuestas sobre la ley de violencia de género, conciliación laboral, abusos sexuales, violencia machista,…); **(4) terrorismo** (Guerra de Siria, yihadismo, DAESH, ISIS, ETA,…); **(5) corrupción** (amnistía fiscal, imputados, fraude fiscal, aforamientos, caso Lagarde FMI,…); **(6) *politainment*** (participación de los candidatos en *talkshows*, tertulias políticas o programas de entretenimiento); **(7) economía y crisis** (economía global, economía española, austeridad, recortes, recuperación económica, rescate, riesgo de pobreza, promesas de campaña sobre el IRPF o los impuestos,…); **(8) bloqueo institucional** (ingobernabilidad, Estado post-electoral, bloqueo en la formación de gobierno, falta de acuerdo,…); **(9) educación** (reforma de ley de educación, Formación Profesional, sistema de becas, academia y ciencia,…); **(10) regeneración y cambio** (vieja política, nuevos partidos, fin del bipartidismo, partidos tradicionales, inmovilismo, fragmentación de partidos y voto,…); **(11) reforma constitucional** (transición nacional, reformulación territorial de los privilegios de las regiones españolas,…); **(12) empleo y prestaciones** (empleo, creación de empleo, reforma

laboral, becarios, precariedad, temporalidad, despido libre,…); **(13) votación y proceso electoral** (inicio de campaña, voto de los indecisos, anarquía y no votar en las elecciones, el voto útil, voto por correo, jornada de reflexión, junta electoral,…); **(14) debates** (seguimiento de debates electorales en televisión); **(15) política internacional** (relaciones España-Europa, política europea, refugiados, política exterior,…); **(16) Estado del bienestar** (libertad de expresión, igualdades y desigualdades, justicia social, privatizaciones, gasto social, derechos ciudadanos, lucha de clases, plan de emergencia social,…); **(17) nuevas tecnologías** (redes sociales, Trending Topic, seguimiento de campaña por los CM, hashtag,…).

5. Resultados

A continuación, presentamos los resultados derivados de la aplicación de la metodología CoDa sobre los datos obtenidos del análisis de contenido. En esencia, ilustramos la representación de la teoría de la AS, en el período electoral de 2015, y sobre los temas que han suscitado opinión entre los opinantes de los principales rotativos españoles. Siguiendo este esquema, el conjunto de artículos de opinión sobre política recopilados se incorporan en sus pertinentes cabeceras, en aras de inducir la representación de la AS para el conjunto del período.

En la *Figura 1* presentamos el biplot de forma, donde las *distancias entre emisores* constituyen aproximaciones de sus distancias de Aitchison. En otras palabras, constituye la representación más aproximada para el estudio de las similitudes/diferencias entre los periódicos. Otro elemento interpretativo son las longitudes o *módulos de los vectores-variable* (los temas). A mayor longitud, mejor explicado o aproximado está el tema.

Según el biplot de forma, los temas representados de manera más fiable sobre las dos primeras dimensiones del análisis en componentes principales son: *(17) nuevas tecnologías*, *(11) reforma constitucional*, *(6) politainment*, *(4) terrorismo*, *(9) educación* y *(5) corrupción*; mientras que los representados de manera menos fiable son *(16) Estado del bienestar*, *(12) empleo y prestaciones*, *(13) votación y proceso electoral* y *(1) pactos*. En conjunto la fiabilidad es aceptable, puesto que la proporción de varianza explicada por las dos primeras dimensiones del análisis en componentes principales es del 72%. En consecuencia, la posición de cada emisor (periódico) respecto a los temas que conforman su entorno más próximo también es fiable.

Figura I. Biplot de forma de los temas top17 en los cinco rotativos.
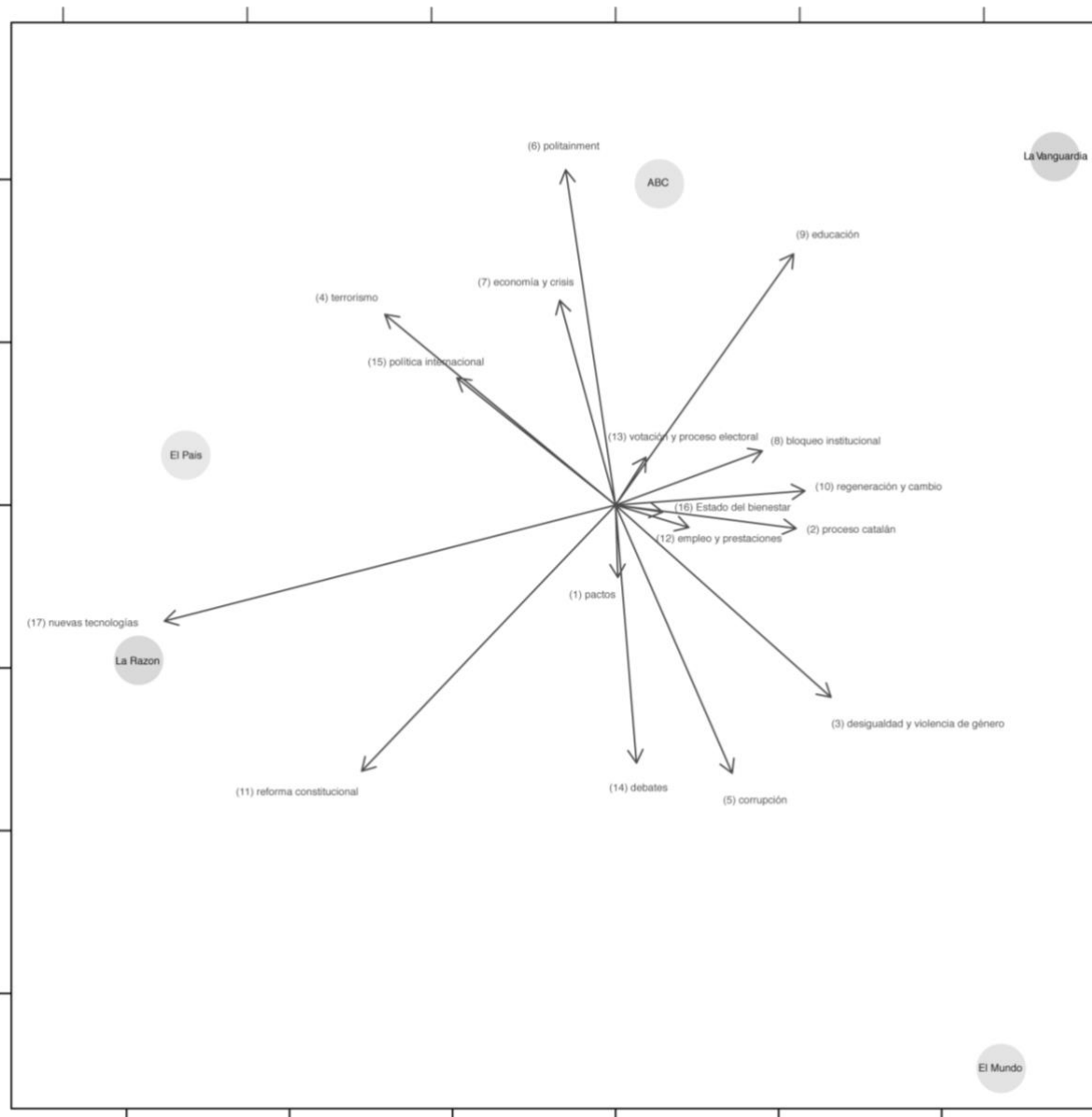
Fuente: *Elaboración propia.*

En el biplot de forma se intuyen periódicos con un comportamiento parecido en lo que respecta a su composición de contenidos emitidos (los temas que han centrado las opiniones sobre política de los opinantes). Por ejemplo, los periódicos *El País* y *La Razón* emiten composiciones de contenidos parecidas. En cambio, las emiten muy distintas que los periódicos *La Vanguardia* y *El Mundo* que, entre ellos, también se diferencian. Otros grupos de periódicos parecidos son *ABC* y *La Vanguardia*, que a su vez se diferencian sustancialmente con *El Mundo.* En este sentido, *La Razón*, *El País*, *ABC* y *La Vanguardia* conforman un arco de temas que en comparación con *El Mundo* aparecen considerablemente opuestos. Asimismo, cabe apuntar que, si bien decíamos anteriormente que estos cinco periódicos abarcan todas las opciones ideológicas en nuestro país (López García 2004:15), hay que tener presente que las similitudes o diferencias que se presentan en esta fase corresponden a los temas que han suscitado interés a los opinantes de los periódicos y no a los fundamentos ideológicos de los mismos. Es decir, si bien es cierto que el tema *(7) economía y crisis* define una dirección sobre la cual tanto *El País* como el *ABC* (ideológicamente opuestos) tendrían proyecciones destacadas, ello no implica que los

opinantes de ambos periódicos compartan una misma visión sobre el tema, únicamente indica que los opinantes sobre política de estos periódicos han llevado el tema a la AS (pudiendo criticar la crisis por las acciones de gobierno o, por el contrario, minimizar sus efectos por el buen hacer del mismo ejecutivo).

En otro nivel, resulta de especial interés la información que proporciona este método de visualización para interpretar el nivel de *proporcionalidad en el establecimiento de los temas* de cada emisor (periódico) en relación al grupo de temas top17 que conforman la AS. Si tomamos como paradigma de la proporcionalidad el centro del gráfico (es decir, este punto correspondería a aquellos periódicos que abordan el conjunto de temas top17 con la misma proporción que el global de la prensa), y miramos la distancia de cada periódico a dicho centro, podemos configurar una ordenación de los periódicos que, de más a menos, siguen esta simetría en el tratamiento del conjunto de temas analizados; resultando que *ABC* es el periódico que guarda una mayor proximidad a la proporción global, seguido de *El País*, *La Razón*, *La Vanguardia* y, finalmente, *El Mundo*. Por ello, el conjunto de estos datos indica que del periódico *ABC* a *El Mundo* encontramos una escalada desigual en los temas que se establecen en la agenda de cada periódico. En otras palabras, dicha escalada corresponde al hecho que un periódico hable poco de muchos temas (el caso de *ABC* y *El País*) o mucho de pocos temas (donde encontramos los casos de *La Vanguardia* y *El Mundo*).

Por su parte, la *Figura 2* presenta el *biplot de covarianza,* donde el principal elemento de interpretación son las *distancias entre los extremos de los vectores-componente* (los temas). En este sentido, extremos de dos vectores próximos entre sí indican temas que guardan una alta proporcionalidad y extremos alejados indican lo contrario. Por ejemplo, corrupción (5) y regeneración y cambio (10) tienden a estar de forma conjunta relativamente muy presentes en algunos rotativos (El mundo) y de forma conjunta relativamente poco presentes en otros (ABC); en cambio, politainment (6) tiende a estar muy presente cuando el bloqueo institucional (8) lo está poco.

Para el estudio de la AS, la representación adquiere un grado más de atractivo cuando disponemos la metodología composicional al servicio de dos períodos comparados bajo los mismos temas y emisores. En nuestro caso, la *Figura 2* presenta los periódicos y los temas top17 diferenciados por el espacio de campaña electoral (1q) y post-electoral (2q) lo que representa la posibilidad de desarrollar un análisis inter-temporal.

Figura II. Biplot de covarianza de los temas top17, por quincenas (1=primera quincena y 2=segunda), en los cinco rotativos y con ejemplo de proyección ortogonal.
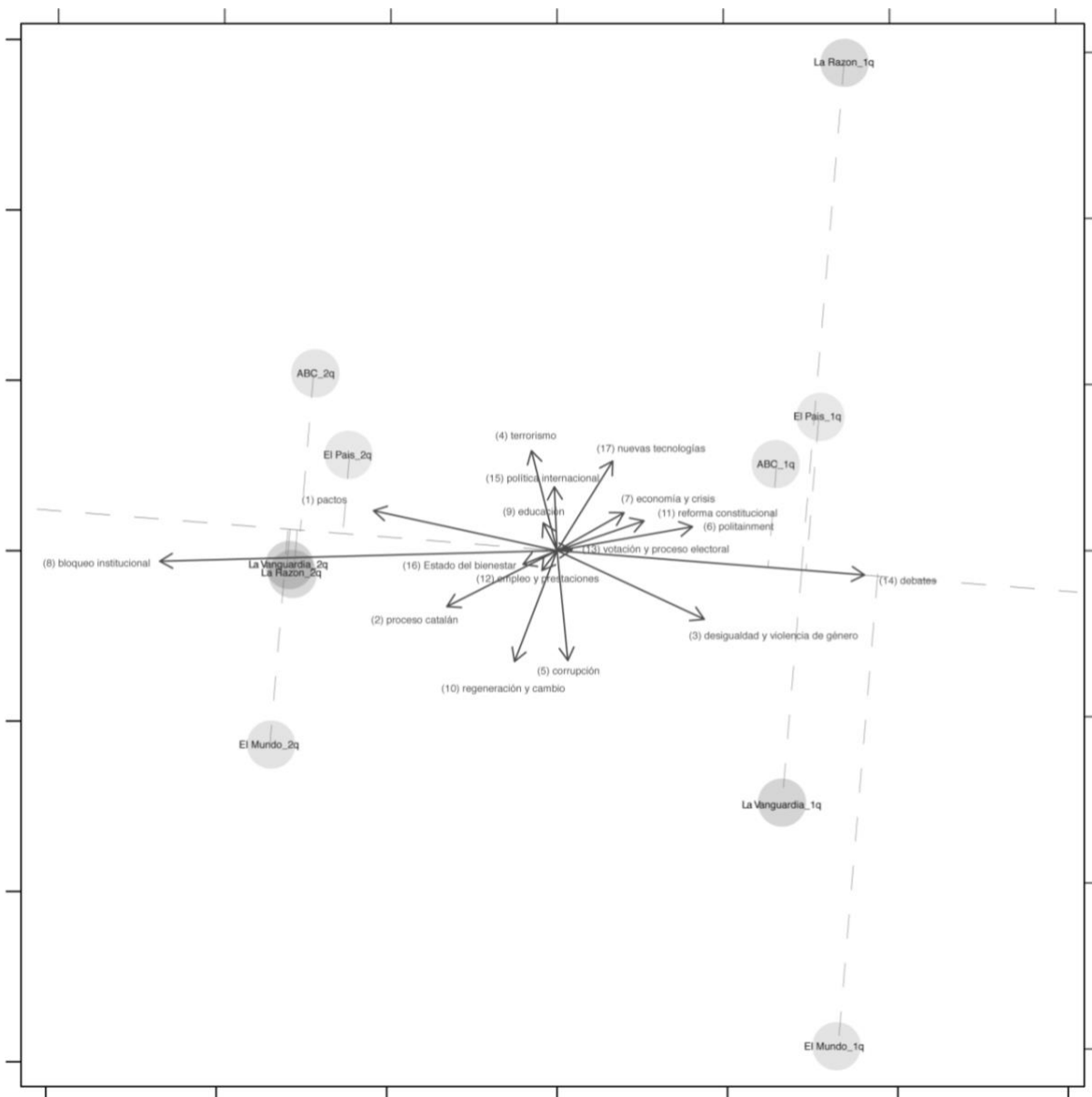
Fuente: *Elaboración propia.*

El biplot de covarianza también permite visualizar la importancia aproximada de cada tema para cada periódico. Si *proyectamos los periódicos ortogonalmente* (los dejamos caer formando un ángulo de 90 grados sobre la dirección definida por cada vector-tema), el sentido indicado por el vector, señala hacia los puntos con un mayor contenido relativo de dicho tema. En este sentido, y sirva como ejemplo, si proyectamos ortogonalmente los periódicos sobre la dirección del contenido *(14) debates* (el vector prolongado con la línea discontinua horizontal), vemos que los periódicos en los cuales el contenido tiene una mayor presencia varían según la quincena. En el primer período (1q) son los opinantes de *El Mundo*, con diferencia, los que más tratan el tema, seguidos de *El País, La Razón, La Vanguardia* y finalmente *ABC*. Diferente del segundo período (2q), donde pasa a ser claramente *El País* quien domina el tema, seguido de *ABC*, *La Razón*, *La Vanguardia* y *El Mundo*, muy cercanos entre ellos. Podemos así identificar aquellos temas que aparecen asociados para cada periódico, así como para cada espacio de tiempo analizado. Consecuentemente, el estudio dinámico entre dos períodos de tiempo nos permite visualizar que aquellos temas top17 que marcaron la AS de la opinión sobre política en el periodo de campaña electoral en los cinco

rotativos (politainment -6-, debates -14- y desigualdad y violencia de género -3-, pasaron a ser relegados por otro grupo de temas en el espacio post-electoral, en especial los pactos (1), el bloqueo institucional (8) y el proceso catalán (2).

6. Conclusiones

Este estudio ha constatado la viabilidad de representar de manera intuitiva la teoría de la AS por vía del análisis composicional (CoDa) y con representaciones mediante dos tipos de gráficos biplot. Con este desarrollo empírico acompañado de la discusión de sus fundamentos estadísticos se propone consolidar la incipiente línea metodológica en el estudio de la AS que principalmente pone en valor la importancia relativa entre los emisores y los temas que construyen la AS. Un abordaje que resulta ser especialmente revelador en su propuesta de superar los métodos tradicionales, para establecer un contexto metodológico que, a su vez, reduce la complejidad interpretativa en su fase de representación.

En relación a la visualización de la AS de los artículos de opinión sobre política en el conjunto de los cinco periódicos analizados, se alcanzan dos conclusiones especialmente destacables. Por un lado, los periódicos con composiciones de contenidos parecidas, pero con posiciones ideológicamente opuestas (como serían los casos de *El País* con *La Razón* o *ABC* con *La Vanguardia*) indican que, si bien los opinantes de ambos rotativos llevan contenidos muy parecidos al debate mediático, estos lo hacen desde posiciones ideológicamente opuestas y, en consecuencia, ejercen de contraste en el ágora del debate público. Un escenario que deriva significativamente a la representación de lo que en la teoría de la AS se conoce con el concepto de encuadramiento. En un segundo orden, el biplot de la AS es altamente trascendente en lo relativo a los niveles de proporcionalidad en la selección de los temas por parte de los opinantes (o, por ende, los periódicos), ya que la posición relativa de cada periódico en relación al centro del gráfico establece aquellos emisores que tratan pocos temas, pero con mucha frecuencia, de aquellos que abordan un mayor número de temas, pero con menor frecuencia.

En relación a los temas concretos que contribuyen a distinguir los periódicos, el análisis de las proyecciones ortogonales de cada periódico (punto) sobre cada tema (vector), representado en el conjunto de la AS del periodo, nos lleva a poder afirmar cuáles son los temas más (o menos) tratados por cada periódico

Cabe destacar una limitación comúnmente mencionada de CoDa, ya que no es un método apropiado para tablas de datos con predominio de ceros (Martín-Fernández et al., 2015). Con todo, cabe apuntar que podemos minimizar esta limitación desarrollando estudios de la AS con un volumen de datos más elevado, cubriendo un mayor número de artículos periodísticos. También podemos minimizarla con un proceso bietápico de codificación/categorización de los temas, que permita la inclusión de varios subtemas dentro de un mismo tema más amplio (categoría), lo que en la terminología CoDa se conoce como amalgama.

Para concluir, la investigación permite proponer la apertura de una herramienta metodológica innovadora sobre el estudio de la AS y revela un modelo a seguir para representar una de las principales teorías de las ciencias de la comunicación. Asimismo, consideramos que el estudio de caso realizado aporta luz al encuadre mediático de los cinco periódicos en el contexto de las Elecciones Generales españolas del año 2015, y contribuye a completar la mirada sobre la construcción mediática de la opinión sobre política en el tratamiento de los periodos electorales.

7. Referencias bibliográficas

Abejón Mendoza, Paloma (2013). Estado del periodismo de opinión en España: polarización, género y emolumentos. En: *ZER – Revista de Estudios de Comunicación*, Vol.18, Núm. 34. País Vasco: Universidad del País Vasco.

Aitchison, John (1982). The statistical analysis of compositional data. *Journal of the Royal Statistical Society. Series B (Methodological)*, 44, 139–177.

Aitchison, John (1983). Principal component analysis of compositional data. *Biometrika*, 70, 57–65.

Aitchison, John (1986). *The Statistical Analysis of Compositional Data. Monographs on Statistics and Applied Probability*. Londres: Chapman and Hall.

Aitchison, John; Barceló-Vidal, Carles; Martín-Fernández, José Antonio y Pawlowsky-Glahn, Vera (2000). Logratio analysis and compositional distances. *Mathematical Geology,* 32, 271-275.

Aitchison, John y Greenacre, Michael (2002). Biplots of compositional data. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 51, 375-392.

Barceló-Vidal, Carles y Martín-Fernández, José Antonio (2016). The mathematics of compositional analysis. *Austrian Journal of Statistics*, 45, 57-71.

Batista-Foguet, Joan Manuel; Ferrer-Rosell, Berta; Serlavós, Ricard; Coenders, Germà y Boyatzis, Richard Eleftherios (2015). An alternative approach to analyze ipsative data. Revisiting Experiential Learning Theory. *Frontiers in Psychology*, 6, 1742.

Berelson, Bernard (1952). *Content analysis in communication research*. New York, Hafner.

Besova, Asya A. y Cooley, Skye Chance (2009). Foreign News and Public Opinion: Attribute Agenda-Setting Theory Revisited. Ecquid Novi: *African Journalism Studies*, 30, 2, 219-242, DOI: 10.1080/02560054.2009.9653403

Blasco-Duatis, Marc; García Fernández, Nuria y Cunha, Isabel (2017). Political opinion in the Spanish newspapers. Analysis of the period General Elections campaign in Spain, 2015. *Revista Latina de Comunicación Social*, 72, 349-373.

Blasco-Duatis, Marc; Coenders, Germà y Saez, Marc (2018a). Compositional visualization of intermedia agenda setting by the main media groups and political parties in the Spanish 2015 General Elections. *Revista Latina de Comunicación Social*, 73, 264-292.

Blasco-Duatis, Marc; Sáez Zafra, Marc y García Fernández, Nuria (2018b). Compositional representation (CoDa) of the agenda-setting of the opinion makers on politics in the main Spanish media groups in the 2015 General Elections. *Communication & Society*, 31, 2, 1-28.

Brown, Anna (2016). Thurstonian scaling of compositional questionnaire data. *Multivariate Behavioral Research*, 51, 345-356.

Coenders, Germà; Hlebec, Valentina y Kogovšek, Tina (2011). Measurement quality in indicators of compositions. A compositional multitrait-multimethod approach. *Survey Research Methods*, 5, 63-74.

Cohen, Bernard Cecil (1963). *The press and foreign policy*. Princenton University Press, New York.

Conway, Bethany A.; Kenski, Kate y Wang, Di (2015). The rise of Twitter in the political campaign: Searching for intermedia agenda-setting effects in the presidential primary. *Journal of Computer-Mediated Communication*, 20, 4, 363-380.

Cui, Di y Wu, Fang (2017). Inter-media agenda setting in global news production: examining agenda attributes in newspaper coverage of the MH370 incident in the U.S., China, and Hong Kong. *Asian Journal of Communication*, DOI: 10.1080/01292986.2017.1305426

Dearing, James W. y Rogers, Everett M. (1996). *Agenda Setting*. Sage Publications, Thousand Oak, CA.

Del Orbe Ayala, Kenia (2013). Tratamiento informativo en la prensa española durante la campaña electoral de las Elecciones Generales de 2011. *Razón y Palabra*, 84, 584-601.

Egozcue, Juan José y Pawlowsky-Glahn, Vera (2011). Basic concepts and procedures. En Pawlowsky-Glahn, Vera y Buccianti, Antonella (Eds.), *Compositional Data Analysis. Theory and Applications:* 13-28. Nueva York, NY: Wiley.

Egozcue, Juan José y Pawlowsky-Glahn, Vera (2016). What are compositional data and how should they be analyzed? *Boletin de Estadistica e Investigacion Operativa*, 32, 5-29.

Egozcue, Juan José; Pawlowsky-Glahn, Vera; Mateu-Figueras, Gloria y Barceló-Vidal, Carles (2003). Isometric logratio transformations for compositional data analysis. *Mathematical Geology*, 35, 279–300.

van Eijnatten, Frans M.; van der Ark, L. Andries y Holloway, Sjaña S. (2015). Ipsative measurement and the analysis of organizational values: an alternative approach for data analysis. *Quality & Quantity*, 49, 559-579.

Ferin Cunha, Isabel, Cabrera, Ana y Méndez Muros, Sandra (2015). La corrupción política como noticia en Portugal y España. Análisis comparado de casos "Freeport" y "Palma Arena". *Anduli*, 14, 29-44.

Ferrer-Rosell, Berta; Coenders, Germà y Martínez-Garcia, Esther (2015). Determinants in tourist expenditure composition- the role of airline types. *Tourism Economics*, 21, 9-32.

Ferrer-Rosell, Berta; Coenders, Germà y Martínez-Garcia, Esther (2016). Segmentation by tourist expenditure composition. An approach with compositional data analysis and latent classes. *Tourism Analysis*, 21, 589-602.

Fishman, Mark (1983). *La fabricación de la noticia*. Tres Tiempos, Buenos Aires.

Frederick, Evan L.; Burch, Laure M. y Blaszka, Matthew (2013). A shift in set: examining the presence of agenda setting on twitter during the 2012 London Olympics. *Communication & Sport*, 3,3, 312-333.

Garza Alanis, Emma C. (2013). Analizando la elección presidencial del 2012 desde la perspectiva de la agenda setting en la prensa de Monterrey. *Estudios sobre el Mensaje Periodístico*, 19, 793-801.

Guo, Lei; Chen, Yi-Ning Kaherine; Vu, Hong; Wang, Qian; Aksamit, Radoslaw; Guzek, Damian; Jachimowski, Marek y McCombs, Maxwell (2015). Coverage of the Iraq War in the United States, Mainland China, Taiwan and Poland. *Journalism Studies*, 16, 3, 343-362, DOI: 10.1080/1461670X.2014.885198

Hlebec, Valentina; Kogovšek, Tina y Coenders, Germà (2012). The measurement quality of social support survey measurement instruments. *Metodološki Zvezki*, 9, 1-24.

Igartua, Juan José y Humanes, María Luisa (eds.) (2004). Teoría e investigación en comunicación social. Síntesis, Madrid.

Jungherr, Andreas; Schoen, Harald y Jürgens, Pascal (2016). The mediation of politics through Twitter: An analysis of messages posted during the campaign for the German federal election 2013. *Journal of Computer-Mediated Communication*, 21, 1, 50-68.

Kogovšek, Tina; Coenders, Germà y Hlebec, Valentina (2013). Predictors and outcomes of social network compositions. A compositional structural equation modeling approach. *Social Networks*, 35, 1, 1-10.

Koziner, Nadia y Zunino, Esteban (2013). La cobertura mediática de la estatización de YPF en la prensa argentina: un análisis comparativo entre los principales diarios del país. *Global Media Journal México*, 10, 19, 1-25.

Krippendorff, Klaus (1990). *Metodología de análisis de contenido: teoría y práctica*. Barcelona, Paidós.

Lang, Kurt y Lang, Gladis E. (1966). The Mass Media and Voting, en Berelson, B. y Janowitz, M. (eds.), *Reader in Public Opinion and Communication*, Free Press, New York, p. 455-472.

Lim, Jeongsub (2011). First-level and second-level intermedia agenda-setting among major news websites. *Asian Journal of Communication*, 21, 2, 167-185, DOI: 10.1080/01292986.2010.539300

Lippmann, Walter (1922). *Public Opinion*. Macmillan, New York.

López García, Guillermo (2004). *Comunicación electoral y formación de la opinión pública: las elecciones generales de 2000 en la prensa española*. Valencia: Servei de Publicacions de la Universitat de Valencia.

Lovell, David.; Pawlowsky-Glahn, Vera.; Egozcue, Juan José; Marguerat, Samuel y Bähler, Jürg (2015). Proportionality: a valid alternative to correlation for relative data. *PLoS Computational Biology*, 11, e1004075.

Luhmann, Niklas (1973). *Ilustración sociológica y otros ensayos*. Editorial Sur, Buenos Aires.

Luo, Yunjuan (2014). The Internet and agenda setting in China: The influence of online public opinion on media coverage and government policy. *International Journal of Communication*, 8, 1289–1312.

Marques de Melo, José (1985). *A opinão no jornalismo brasileiro*. Petrópolis, Vozes.

Marletti, Carl (1982). L'informazione tematizzata. Nuove tecnologie della comunicazione e trasformazione dei modelli giornalistici. *Angeli*, Milan, 163-225.

Martín-Fernández, José Antonio; Barceló-Vidal, Carles y Pawlowsky-Glahn, Vera (2003). Dealing with zeros and missing values in compositional data sets using non-parametric imputation. *Mathematical Geology*, 35, 253–278.

Martín-Fernández, José Antonio; Palarea-Albaladejo, Javier y Olea, Ricardo A. (2011). Dealing with zeros. En V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications:* 47-62. Nueva York, NY: Wiley.

Martín-Fernández, José Antonio; Hron, Karel; Templ, Matthias; Filzmoser, Peter y Palarea-Albaladejo, Javier (2015). Bayesian-multiplicative treatment of count zeros in compositional data sets. *Statistical Modelling*, 15, 134-158.

Martin Vivaldi, Gonzalo (1981). *Géneros periodísticos*. Paraninfo, Madrid (Tercera edición) p. 176.

Mateu-Figueras, Gloria; Daunis-i-Estadella, Josep; Coenders, Germà; Ferrer-Rosell, Berta; Serlavós, Ricard y Batista-Foguet, Joan Manuel (2016). Exploring the relationship between two compositions using canonical correlation analysis. *Metodološki Zvezki*, 13, 131-150.

Mateu-Figueras, Gloria; Pawlowsky-Glahn, Vera y Egozcue, Juan José (2011). The principle of working on coordinates. En V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications:* 31-42. Nueva York, NY: Wiley.

Mazzoleni, Gianpietro (1998). *La comunicazione política*. Il Mulino, Bolonia.

McCombs, Maxwell E. y Shaw, Donald L. (1972). The agenda-setting function of mass media. *Public Opinion Quarterly*, 36(2), p. 176–187.

McCombs, Maxwell E. (2006). *Estableciendo la agenda*. Paidós Comunicación, Barcelona.

Min, Young (2004). Campaign agenda formation: The news media in the Korean congressional election of 2000. *Asian Journal of Communication*, 14, 2, 192-204, DOI:10.1080/0129298042000256767

Monti, Gianna S.; Mateu-Figueras, Gloria y Pawlowsky-Glahn, Vera (2011). Notes on the scaled Dirichlet distribution. En Pawlowsky-Glahn, Vera y Buccianti, Antonella (Eds.), *Compositional Data Analysis. Theory and Applications:* 128-138. Nueva York, NY: Wiley.

Moreno Espinosa, Pastora (2003). Géneros para la persuasión en prensa: los editoriales del Diario El País. *Revista Ámbitos*, nº9-10, 2º Semestre, pp. 225-238.

Naudé, Annelie M.E. y Froneman, Johannes D. (2003). Trends in news agenda setting by the Sunday Times and Rapport in 2000. Ecquid Novi: *African Journalism Studies*, 24, 1, 84-98, DOI: 10.1080/02560054.2003.9653262

Palarea-Albaladejo, Javier y Martín-Fernández, José Antonio (2015). zCompositions—R package for multivariate imputation of left-censored data under a compositional approach. *Chemometrics and Intelligent Laboratory Systems*, 143, 85-96.

Pawlowsky-Glahn, Vera y Buccianti, Antonella (2011). *Compositional Data Analysis. Theory and Applications*. Nueva York, NY: Wiley.

Pawlowsky-Glahn, Vera y Egozcue, Juan José (2001). Geometric approach to statistical analysis on the simplex. *Stochastic Environmental Research and Risk Assessment,* 15, 384-398.

Pawlowsky-Glahn, Vera; Egozcue, Juan José y Tolosana-Delgado, Raimon (2015). *Modeling and Analysis of Compositional Data*. Chichester: Wiley.

Pearson, Karl (1897). Mathematical contributions to the theory of evolution. On a form of spurious correlations which may arise when indices are used in the measurements of organs. *Proceedings of the Royal Society*, 60, 489-498.

Pierotti, Michele E.R.; Martín-Fernández José Antonio y Seehausen, Ole (2009). Mapping individual variation in male mating preference space: multiple choice in a colour polymorphic cichlid fish. *Evolution*, 63, 2372-2388.

Ragas, Matthew W. y Kiousis, Spiro (2010). Intermedia agenda-setting and political activism: MoveOn.org and the 2008 presidential election. *Mass Communication and Society,* 13, 5, 560-583, DOI: 10.1080/15205436.2010.515372

Rogstad, Ingrid (2016). Is Twitter just rehashing? Intermedia agenda setting between Twitter and mainstream media. *Journal of Information Technology & Politics*, 13, 2, 142-158, DOI: 10.1080/19331681.2016.1160263

Rubio-García, Raquel (2014). Twitter y la teoria de la Agenda-Setting: mensajes de la opinión pública digital/Twitter and the Agenda-Setting theory: messages from the digital public opinion. *Estudios Sobre el Mensaje Periodístico*, 20, 1, 249-265.

Sádaba, Teresa (2008). *Framing: el encuadre de las noticias. El binomio terrorismo-medios*. La Crujía Ediciones, Buenos Aires.

Shaw, Donald L. y McCombs, Maxwell F. (eds.) (1977). *The emergence of American political issues. The agenda setting function of the press*, West Publishing Company, St. Paul, MN.

Sweetser, Kaye D.; Golan, Guy J. y Wanta, Wayne. (2008). Intermedia Agenda Setting in Television, Advertising, and Blogs During the 2004 Election. *Mass Communication and Society*, 11, 2, 197-216, DOI: 10.1080/15205430701590267

Thió-Henestrosa, Santiago y Martín-Fernández, José Antonio (2005). Dealing with compositional data: The freeware CoDaPack. *Mathematical Geology,* 37, 773-793.

Van den Boogaart, Karl Gerald y Tolosana-Delgado, Raimon (2013). *Analyzing Compositional Data with R*. Berlin: Springer.

Van Dijk, Teun A. (2010). Discurso, conocimiento, poder y política. *Revista de Investigación Lingüística*, 13, 167-215. Universidad de Murcia.

Vives-Mestres, Marina; Martín-Fernández, José Antonio y Kenett, Olwing R. (2016). Compositional data methods in customer survey analysis. *Quality and Reliability Engineering International*, 32, 2115–2125.

Weimann-Saks, Dana; Ariel, Yaron; Malka, Vered y Avidar, Ruth (2016). Trends in public and media agenda-setting during the 2015 Israeli elections. *Israel Affairs*, 22, 3-4, 727-742, DOI: 10.1080/13537121.2016.1174386

Wimmer, Roger D. y Dominick, Joseph R. (2006). *Mass Media Research: an introduction*. USA, Thomson Wadsworth.

Wolf, Mauro (1991). *La investigación de la comunicación de masas*. Paidós, Buenos Aires.

4.1.3. Artículo III

Blasco-Duatis, M., Coenders, G., Sáez, M., Fernández García, N., Cunha, I. (en revisión). Mapping the agenda-setting theory, priming and the spiral of silence in Twitter accounts of political parties. *El* Profesional *de la Información*.

MAPPING THE AGENDA-SETTING THEORY, PRIMING AND THE SPIRAL OF SILENCE IN TWITTER ACCOUNTS OF POLITICAL PARTIES

Marc Blasco-Duatis[1], Germà Coenders[1,2], Marc Saez[1,2], Nuria Fernández García[2], Isabel Ferin Cunha[3]

[1] Research Group on Statistics, Econometrics and Health (GRECS), University of Girona, Girona, Spain. http://orcid.org/0000-0002-7380-9981

[1,2] CIBER of Epidemiology and Public Health (CIBERESP), Madrid, Spain. http://orcid.org/0000-0002-5204-6882 , https://orcid.org/0000-0003-1882-0157

[2] Department of Journalism and Communication Studies. Universitat Autònoma de Barcelona. http://orcid.org/0000-0003-2514-8186

[3] Associate Professor with Aggregation. Letters faculty of the University of Coimbra (FLUC). http://orcid.org/0000-0001-8701-527X

Abstract

This paper presents the results of a content analysis of the official Twitter accounts of the main Spanish political parties (*Partido Popular*, *Partido Socialista Obrero Español*, *Podemos*, *Ciudadanos* and *Izquierda Unidad*) carried out for the period of the 2015 Spanish general elections. Compositional biplots are used for data visualization. Unlike traditional approaches, compositional analysis in general, and the biplot in particular, emphasize the relative salience of issues within the agenda. This analysis sheds light on the agenda-setting theory and closely-related phenomena such as priming (based on associative-activation among a group of issues that are more influential than others) and the spiral of silence (the issues derived from the hierarchy process of agenda-setting that are omitted just after the election day).

Key words: *agenda-setting, biplot, compositional data, political communication, priming, spiral of silence.*

Funding

Acknowledgements

Conflict of interest: None

This manuscript is an original contribution, which has not been published previously, either wholly or in part, or in any format, including electronically. All the authors will disclose any current or potential conflict of interest, including any financial, personal or other relationships with third parties or organizations that could inappropriately influence or be perceived to influence their work, within three years of beginning the submitted work.

1.- Introduction

The study of agenda-setting (AS) has mainly been approached from content analysis with the aim of determining the relative or comparative importance of some issues over others. The theory posits that certain means of communication or social actors serve as information mediators in a praxis that involves including or omitting certain issues on the media stage depending on where they are on the hierarchy (McCombs 2004). Existing differences between senders and content categories in AS have traditionally been studied either descriptively, by counting the occurrence of issues, or by means of Spearman correlations, taking only rank order into consideration and leaving out any other information. Recently, compositional analysis (CoDa), the standard statistical methodology when the researcher is interested in the relative importance of the parts of a whole (Aitchison 1986), has started to be applied in AS research (Blasco Duatis et al., 2018a, 2018b, 2018c). We especially focus on a data visualization tool, the compositional biplot, which allows us to see which issues are prioritized, who their senders are and the relationships between them, while taking into consideration the fact that the relevant information is the relative volume of each issue for each sender.

Walter Lippmann's seminal work *Public Opinion* (1922) established that the media defines the cognitive map of society based on how people experience the world they live in, generating an informative 'pseudo-environment' derived from the need to simplify the complexity of social events. In the early 1970s, McCombs and Shaw (1972) presented the AS theory based on this conception, concluding that the mass communication media has an enormous influence on the public determining which issues are of informative interest and how much space and emphasis they will be given. This process of creating a hierarchy of issues serves to focus the public's attention, thoughts and actions under the logic that the events that receive most coverage do not need to be the objectively most important ones but invariantly are those with the highest attached importance by the public (McCombs and Shaw 1972). The presence or absence of an issue on the agenda will set the priority of interests and confer a sphere of preferences on what is put forward for public debate and in media news.

From among the conceptualisations that emerge from the AS theory, we can highlight the priming effect and the spiral of silence. The priming perspective, which has its origins in cognitive psychology, is based on the assumption that the power of the media is such that it is capable of establishing the criteria that will be used by receivers to develop the capacity to judge the social reality (Geers and Bos 2017; Iyengar and Kinder 1987), providing the public with the tools required to shape their ways of thinking based on the most highlighted events, which are directly correlated in the mind with examples and associations (Tversky and Kahneman 1973). At its origin, the concept is defined from the prioritisation or prominence of a set of issues to serve as benchmarks to assess the different questions that concern public life. The importance of the effect resides in the process whereby the media prioritises certain issues for the public, because minority voices are isolated and salient issues reinforced (Iyengar and Kinder 1987). The effect of the spiral of silence (Noelle-Neumann 1993) is based precisely on this principle of isolating minority voices and their link with AS hierarchy practices, paying special attention to the voices that are omitted on certain issues driven by mass opinion, where those who are not in favour of an idea do not speak up out of an unconscious feeling of fear of isolation, serving to reinforce the predominant opinion.

Digital media has shaped a new space that must be considered in the study of AS in general and political campaigns in particular (Åström and Karlsson 2013; Stier et al. 2018). Microblogging web platforms like Twitter have reversed influence processes, taking the message not only from traditional means of communication to the public, but also from political parties themselves to citizens, so much so that over the last decade research in the field of the AS theory has focused on studying digital means of communication as new spaces capable of influencing the public space and so participating in constructing the AS theory (Meraz 2009). In this scenario, social media have become an essential tool for developing political life, especially in election campaign processes (Perlmutter 2008; Towner and Dulio, 2012), to become pivotal in some campaigns like president Barack Obama's in 2008, when his social followers transformed into direct participants in his electoral conquest.

Among the diversity of social media, Twitter has been posited as a new political space to disseminate information to a growing audience (Conway et al. 2015) and has become a reference tool for compiling information, connecting better with potential voters and following the actions of sources (Parmelee 2013). Furthermore, this platform has become the most popular of the set of social networks to participate in political persuasion with the capacity to attract traffic through all the platforms, as the issues emphasised in tweets are often commented on later on radio and television talk shows and in the press (Parmelee and Bichard 2013). The new relationship dynamics between the media and the public audience and greater pluralism in the media sphere have led to the traditional political communication model being reshaped in a scenario wherein the public and political parties play a more prominent role.

In this article we aim to depict a visual representation of the AS proposed by the main Spanish political parties – Partido (PP), Partido Socialista Obrero Español (PSOE), Podemos, Ciudadanos and Izquierda Unida (IU) – on Twitter during the period leading up to the Spanish general elections held on 20th December 2015. Moreover, the study aims to map the priming effects (based on associative-activation among a group of issues that are more influential than others) and the spiral of silence (the issues derived from the hierarchy process of AS that are omitted and/or replaced).

2.- Methods

2.1.- Traditional approach to the analysis of content categories in the media

The very nature of the AS theory makes analysis of content in the agenda typically focus on the relative or comparative importance of some issues over others (Blasco-Duatis et al. 2018a, 2018b, 2018c). In other words, it is assumed that some media or social actors are busier than others, leading to an overall increase in communication volume, which is void of content-related interest. More often than not, AS hypotheses and research questions are expressed in comparative, relative or competitive terms, examples of which are plentiful: '*Prominent* topics in Twitter messages *compared* to prominent topics in surveys and television news programs' (Jungherr et al. 2016); 'Is there evidence that the *balance* of mass media to citizen media influence *differs among* independent bloggers of diverse political ideologies based on different types of issues?' (Meraz 2009); 'Are there similarities between @London2012 and #London2012 in terms of tweet *focus* (i.e., topic)?' (Frederick et al. 2015); 'What are the issues *emphasized* in the online public agenda, the media agenda and the policy agenda?' (Luo

2014); 'Is Twitter *mainly* rehashing mainstream media content?' (Rogstad 2016); 'The assumption that news media *emphasize and highlight* certain events' (Weimann-Saks et al. 2016); 'The issue *salience* of blogs will show a significant positive correlation with issue *salience* of network television news programs' (Sweetser et al. 2008); 'We will provide a *comparison* between the content broadcast online by traditional news media outlets and the attitudes expressed in Twitter conversation to check whether social networking sites reproduce the same frames proposed by traditional media or not' (Ceron et al. 2016); 'Analyzing which issues *matter most* to Spanish users is essential to determine if traditional media establishes the topics most discussed by users of Twitter Spain' (Rubio-García 2014); 'When quoting tweets, do alternative web-only news outlets use informational quotes *more frequently* than traditional print news outlets?' (Bane 2017); 'Topic *saliences* in messages by candidates and audiences on social media are more similar to each other than to topic *salience* among a mass audience' (Stier et al. 2018). The italics are ours.

The simplest of the common ways to assess similarity among senders of political information according to the content categories they send and to assess which of these categories contribute to their differences, is to compare the frequencies of the top contents (e.g., Blasco-Duatis et al. 2017; Guo et al. 2015; Jungherr et al. 2016), or to use rankings (e.g., Cui and Wu 2017; Lim 2011) with a general lack of focus on how content categories contribute to generating differences among senders, be they relative or absolute. This especially relevant when dealing with the spiral of silence, which deals with issues that constitute a minority of content, whose relative differences are likely high.

Such differences (or similarities) are often assessed by means of Spearman's rank correlations among senders (e.g., Conway et al. 2015; Cui and Wu 2017; Lim 2011; Luo 2014; Stier et al. 2018; Weimann-Saks et al. 2016). This is tantamount to taking neither relative or absolute differences into consideration, but only the rank ordering, thus wasting any other information. Sometimes χ^2 tests for contingency tables are used to reveal differences among senders, but they are even less informative as they say nothing about the extent of these differences (e.g., Frederick et al. 2015; Naudé and Froneman 2003).

2.2.- Compositional data analysis

Compositional Data analysis (CoDa) is the standard statistical method used when data contain information about the relative importance of parts of a whole. The CoDa tradition started with Aitchison's seminal work (1982, 1986) on chemical and geological compositions where only the proportion of each part or component is of interest, since absolute amounts are irrelevant and only tell about the size of the chemical or soil sample. Nowadays, CoDa spans almost all the hard sciences and has started to be used in several fields of social science, such as education (Batista-Foguet et al. 2015), economics (Fry 2011), marketing (Vives-mestres et al. 2016), accounting (Linares-Mustarós et al. 2018), tourism (Ferrer-Rosell and Coenders 2016), values (van Eijnatten et al. 2015), social networks (Kogovšek et al. 2013), time use (Martín-Fernández et al. 2015) and election studies (Egozcue and Pawlowsky-Glahn 2011). Its application to the analysis of AS in political communication is very recent (Blasco Duatis et al., 2018a, 2018b, 2018c), even though, as argued previously, such analysis poses the same problems in all respects as those faced by chemical and geological

analyses. Absolute data are irrelevant and mostly tell about the length of the text, the word count, the popularity of the sender, and so on. Only the proportions of each content category or the relative size of one type of content over another are truly informative. The details and properties of the proposed method have been discussed in Blasco Duatis et al 2018c. A summary follows below.

A composition is typically presented as a vector **z** with D positive components constrained by a unit sum (Aitchison, 1986; Van den Boogaart & Tolosana-Delgado, 2013; Pawlowsky-Glahn et al., 2015):

$$\mathbf{z} = \left(z_1, z_2, ..., z_D \right)$$
$$\text{with } z_j > 0 \quad \text{for all } j = 1, 2, ..., D; \quad \sum_{j=1}^{D} z_j = 1. \tag{1}$$

In our research, each sender of information with political content would have a composition of each of D content categories, expressed as proportions of the total content.

z resides in a R_+^{D-1} subspace called the *simplex*, which is constrained by positiveness and fixed sum, with different operations, angles and distances from the real space. This explains why most statistical workhorses, such as mean, correlation and distance, are to a greater or lesser extent meaningless when applied to **z**. Since one component can only increase if one or more of the others decrease, negative spurious correlations among the components (content categories) emerge (Pearson 1897). Euclidean distances among individual compositions (senders) are also meaningless (Aitchison et al. 2000). Euclidean distance considers the pair of proportions 0.01 and 0.02 to be as mutually distant as 0.11 and 0.12, while in the first pair the difference is 100% and in the second it is less than 10%.

A proper measure of the centre of a sample of n compositions is the closed geometric mean. If g_j is the sample geometric mean of z_j for all n compositions, the centre is expressed as $C(g_1, g_2, ..., g_D)$.

The most common CoDa approach is to express an original compositional vector of D components in logarithms of ratios among components (Aitchison 1986; Egozcue et al. 2003), which constitute a natural way of distilling the information about the relative size of components and form the basis for defining association and distance in a meaningful way.

Log-ratios may be computed between each component and the geometric mean of all the components, in the so-called *centred log-ratios*:

$$\ln\left(\frac{z_j}{\sqrt[D]{z_1 z_2 ... z_D}} \right) \tag{2}$$
$$\text{with } j = 1, 2, ..., D.$$

Aitchison's distance between two senders' content compositions **z** and **z*** considers that said logarithms of ratios carry all the required information about the difference between the two compositions. Two senders at zero distance have identical content proportions.

When there is a larger difference between the log-ratios of two senders, their distance is likewise larger:

$$d\left(\mathbf{z},\mathbf{z}^*\right)=\sqrt{\sum_{j=1}^{D}\left(\ln\left(\frac{z_j}{\sqrt[D]{z_1 z_2 ... z_D}}\right)-\ln\left(\frac{z_j^*}{\sqrt[D]{z_1^* z_2^* ... z_D^*}}\right)\right)^2} \tag{3}$$

Using log-ratios attaches greater importance to differences in content categories with low proportions in the computed distance.

Proportionality between pairs of content categories in AS is a valid alternative to correlation (Lovell et al. 2015). For this purpose, all possible pairwise log-ratios and their variances are computed:

$$\text{Var}(\ln(z_j/z_k))=\text{Var}(\ln(z_k/z_j)) \tag{4}$$

These variances can be arranged in a symmetric matrix with components (i.e., content categories) defining both D rows and D columns, with the same layout as a correlation matrix. This is the so-called variation matrix. $\text{Var}(\ln(z_j/z_k))$ is zero when z_j and z_k behave perfectly proportionally (e.g., senders with twice one content category also have twice the other), corresponding to perfect positive association. The further $\text{Var}(\ln(z_j/z_k))$ is from zero, the lower the association. There is neither a clearly defined threshold representing no association, nor is there an upper bound representing perfect negative association, so values in the matrix must be assessed comparatively.

Computing log-ratios and their variances implies that $\mathbf{z}$ may contain no zero values. If the $\mathbf{z}$ vector contains zeros, they must be replaced beforehand. Among the zero replacement methods discussed in Martín-Fernández et al. (2011) whose discussion is beyond the scope of this article, we use the same method proposed by Blasco Duatis et al., (2018a, 2018b, 2018c) in the AS research context.

2.3.- The CoDa biplot

Like standard data, compositional data require visualization tools to help researchers interpret large data tables with various senders and many content categories. To this end, Aitchison (1983) extended the well-known *principal component analysis* –PCA– procedure to the compositional case. The extension boils down to submitting centred log-ratios (4) to an otherwise standard PCA based on the covariance matrix. Together with Gabriel's (1971) *biplot*, which jointly represents cases and variables in a PCA, this served as the basis for Aitchison and Greenacre (2002) developing CoDa biplots.

A CoDa biplot can be understood as the most accurate representation of a compositional table in two dimensions. As in standard PCA, overall biplot accuracy can be assessed from the percentage of explained variance of the first two PCA scores. Two types of biplot which provide complementary information are available. In CoDa, the *covariance biplot* optimises the representation of the variation matrix among content categories, and the *form biplot* optimises the representation of Aitchison's distances among senders. In both types of biplots, content categories appear as rays emanating from a common origin and senders appear as points. The interpretation is as follows (see Aitchison and Greenacre 2002; van den Boogaart and Tolosana-Delgado 2013; Pawlowsky-Glahn et al. 2015, for further details):

1.	In the form biplot, distances between two points are approximately proportional to Aitchison's distances (3) between the two senders. Senders with similar content compositions appear close together.
2.	In the covariance biplot, distances between the vertices of the rays of two content categories are approximately proportional to the square root of the variance of their corresponding pairwise log-ratio (4). Content categories that behave proportionally for all senders appear close together.
3.	In the form biplot, the lengths of the content category rays are proportional to the quality of the representation of contents in the two-dimensional space, whose average across all contents is the percentage variance explained by the two first PCA scores.
4.	In both biplots, the orthogonal projection of all senders in the direction defined by a ray shows an approximate ordering of the importance of that content category for all senders and can be used to show how the content category contributes to differentiating senders.
5.	The origin of all the rays is both the coordinate centre and the mean. A sender close to this centre in the form biplot behaves approximately like the geometric average of all the senders with regards to its content share.

2.4.- Content analysis of the tweets of the major Spanish political parties

The traditional system of parliamentary representation in Spain inherited from the process of transition to democracy is based on a two-party model with political power alternating between the centre-left (*Partido Socialista Obrero Español* [PSOE]) and the right, *Partido Popular* [PP]). In addition to these two large blocks, the parliamentary spectrum is completed by the green-left (*Izquierda Unida* [IU], with a social democratic ideology, and the nationalist parties (mainly from the historical regions of the Spanish state: Catalonia, the Basque Country, Galicia and Navarra). With the onset of the global economic crisis and the proliferation of serious corruption scandals in the country, 2008 saw an intense representation crisis (Bosch et al. 2017) from which, within the framework of the May 2014 European Elections, two antagonistic parties emerged, which shook up the state's traditional representation and political action mechanisms: *Podemos* ('*We can*'), a left formation born of the anti-austerity movement and *Ciudadanos* ('*Citizen*s'), who had emerged as an anti-nationalist counter-force in the face of the secessionist challenge in the region of Catalonia, and took the leap into state politics to fill the centre-right space.

The 20th December 2015 elections, on which this study focuses, produced a paradigmatic share of parliamentary seats, confirming the demise of bipartisanship and leading to a parliament made up of: PP, the winner, with 123 seats; PSOE with 90; Podemos with 69; Ciudadanos 40 and IU 2, with the other 26 seats distributed among the regional nationalist parties. Even though the traditional parties kept their leading positions, their usual hegemony was diluted by the emergence of the forces that came to be known as *new politics*. The electoral and post-electoral scene was seriously affected by a series of factors, including the Catalan secessionist debate; the proposal of constitutional reform, in which the demands of the Catalan region found a place; the *new* parties who singularized an electoral campaign asking for media attention and characterised by *politainment,* leading the candidates Pablo Iglesias and Albert Rivera to propose a media debate that would run parallel to the traditional two-party one; and

the post-electoral pacts. As a result, forming a viable government would be impredently complex and the culmination was political stalemate and a new election on 26th June 2016.

To map the main Spanish political parties' AS on Twitter during the period of the Spanish General Elections in 2015, we use content analysis (Berelson 1952; Krippendorff 2004; Wimmer et al. 2006) adapted to the Twitter environment. We compiled a database with the *stream[1]* of the set of tweets posted on the official Twitter accounts of the parties with a sole constituency in the Spanish state who were later represented in parliament. The total numbers of tweets made during the 32-day period (from 4th December 2015 to 4th January 2016), which included the two weeks prior to the election on 20th December 2015 and the two weeks afterwards, were: PP, 1650 tweets; PSOE, 2825 tweets; Podemos, 7279 tweets; Ciudadanos, 2918 tweets; and IU, 7673 tweets. The information in each parties' *stream* of tweets from which the database was subsequently compiled were: date and time the tweet was posted, the content of the tweet and, last, if it was a re-tweet. We selected 1000 tweets per party (5000 tweets in total) by systematic random sampling, which ensured proportional allocation according to the date the tweets were posted.

The tweets were codified manually. The need to understand the content of each tweet led us to rule out other methods, such as text mining, because while in some cases a content could be associated with a certain key word or words easy to detect with this method (e.g., terrorism), in others this was not possible (e.g, constitution, which depending on the context could refer to its compliance – within the framework of the Catalan process – or its reform). A list of 264 issues was compiled drawing from Blasco-Duatis et al. (2017) and the study of the first 1000 tweets, and between one and six topics were allocated to each tweet. The issues were then grouped by conceptual similarity into 34 broad categories, from which only the 15 with sufficient weight were selected, from now on referred to as the top15: (1) *pacts* (the politics of pacts between parties, dialogue, understanding, forming a government, the great coalition pact PP-PSOE, in favour of a national pact PP-PSOE-Ciudadanos, pact Ciudadanos-PSOE governing from the centre, from the presidency of Congress, and so on); (2) *Catalan independence* (against nationalism/separatism, sovereignty of the Spanish nation, in favour of Spanish unity, conservatism and against the right to decide in Catalonia, Catalan cultural policy, difficulties in forming an autonomous government in Catalonia, in favour of an agreed, legal referendum in Catalonia, and so on); (3) *gender* (on sexist comments from certain politicians, proposals for the law on domestic violence, labour conciliation, sexual abuse, violence against women, and so on); (4) *terrorism* (the Syrian war, jihadism, DAESH, ISIS, ETA, and so on); (5) *corruption* (tax amnesty, under indictment, tax fraud, parliamentary immunity, IMF Lagarde case, and so on); (6) *politainment* (candidates' participation in talk shows, political discussions or entertainment shows); (7) *economy/crisis* (the global economy, the Spanish economy, austerity, cutbacks, economic recovery, bailout, at risk of poverty, campaign promises about Personal Income Tax and taxes, and so on); (8) *unemployment* (job creation; labour reform, scholarship recipients, job insecurity, employment-at-will, and so on); (9) *education* (reform of the Law on Education, Vocational Training, grant system, academia and science, and so on); (10) *regeneration/change* (old politics, new parties,

---

[1] The *stream* of tweets was provided by the Spanish communications agency DNOISE, by means of the Twitter monitoring tool 'Followthehashtag'.

end of the two-party system, the traditional parties, resistance to change, fragmentation of parties and votes, and so on); (11) *constitutional reform* (national transition, territorial reform of the privileges of the Spanish regions, and so on); (12) *welfare* (freedom of expression, inequality, social justice, privatization, social spending, citizen's rights, class struggle, social emergency plan, and so on); (13) *election campaign* (campaign launch, floating vote, anarchy and not voting in elections, tactical voting, postal voting, reflection forum, electoral commission, and so on); (14) *new technology* (social networks and new technologies, trending topic, campaign tracking by community managers, memes, and so on); (15) *international politics* (Spanish-European relations, European politics, refugees, international politics, and so on).

3.- Results

In what follows we show how the CoDa biplot can be used for visualising the phenomena associated with the AS theory, priming and the spiral of silence in the specific case study of the campaign and post-campaign information posted on the official Twitter accounts of the main Spanish political parties.

Figure 1 presents the AS theory mapping using the form biplot, made up of the top15 contents and their senders (political parties), showing –as do the AS theories priming and the spiral of silence– that the interest lies in the relative/comparative volume of the contents and not in the absolute volume, something which the usual statistical techniques do not allow for. In addition, as typically done in AS studies, the mapping is dynamic and two periods of time are compared: 1) the first two weeks of the electoral campaign; and 2) the two-week post-campaign period. According to the form biplot, the most reliably mapped top15 issues in the first two dimensions of the PCA are: *pacts*, *new technology*, *gender*, *election campaign*, *Catalan independence* and last *unemployment;* while the least reliably mapped issues are: *regeneration/change*, *international politics*, *education*, *constitutional reform* and last *politainment*. Reliability is acceptable in general, given that the first two PCA scores together explain 73% of the total variance. Apart from the biplot, the closed geometric means in the 15 issues in Table 1 (which in turn define the centre of coordinates in the biplot) indicate that the most prominent of the top15 issues across the set of parties are, in this order: *economy/crisis*, *election campaign*, *regeneration/change* and *corruption*.

Considering both periods analysed, two groups of parties that behave similarly with respect to the composition of the content tweeted can be deduced from the form biplot. In the first period, the parties PSOE and Podemos sent similar content compositions, which were different from PP's and Ciudadanos, whose content compositions were similar to each others'. This last pairing is even more accentuated in the second analysis period, with the diagram showing a tendency towards superposition (content compositions that are almost identical). IU's distance from the other four parties in the two periods must be highlighted, which emphasizes the distinct differences in their content composition.

On another level, the information provided by this mapping is particularly interesting for interpreting the level of proportionality in each sender's issues. If we take the centre of the diagram as the paradigm of proportionality (in other words, the point that corresponds to the parties that cover the set of top15 issues in the same proportion as the overall proportion of all the parties), and we look at each parties' distance from the

centre, we can order the parties that most closely to least closely follow this proportionality when dealing with the set of issues analysed, as follows: a) in the first period, Ciudadanos is the party that covers the issues in a proportion most similar to the overall proportion, followed at a certain distance by PP, Podemos, PSOE and, at a substantial distance, by IU; b) in the second period, it is Podemos that covers the issues most similar to the overall proportions, followed closely by PSOE, at a certain distance by Ciudadanos and PP and, again at a substantial distance, by IU. Thus, the set of data in the first period indicates that from Ciudadanos to IU there is a scale of inequality in the treatment of the issues established in the agenda; and the same from Podemos to IU in the second period analysed. In other words, this scale corresponds to a party talking 'a little about a lot of issues' or 'a lot about few topics'. There are notable differences between the electoral campaign period (where the parties are mapped more dispersedly) and the post-electoral period (where there is more concentration). The greater the dispersion between parties, the greater too are the differences in the composition of issues twitted by parties.

The biplot takes on a special significance when the mapping of the AS is dynamic, as it is here. As mentioned earlier, to configure this dynamic representation a practice applied to the AS theory that is widely used among academics, consists in comparing the same sender's agendas in two different periods. Following this structure, the dynamics of the relative presence/absence or omission/signification of the issues in AS can be visualised. This mapping enables us to visualise the phenomenon known as the spiral of silence, because such dynamics established by the hierarchy of issues and AS result in a process of signification of certain issues at the expense of others, which are relegated or omitted. In Figure 1 we can appreciate that in the transition from one period to the other (represented by the broken line), a first level of the spiral of silence is constructed, as we go from a first electoral campaign period where there are four outstanding issues (*gender*, *unemployment*, *economy/crisis* and *corruption*) to a second post-electoral period characterized by four totally different issues (*pacts*, *new technology*, *election campaign* and *Catalan independence*). It is important to contextualise that in the first period there is a focus on seeking electoral support, where the issues are at the centre of the confrontation between the parties' electoral campaigns to win electoral support; whereas in the second period, it is the support from the party bases and seeking common ground that dictates what issues are preeminent now that the need to make post-electoral pacts to form a government is uppermost.

Figures 2 and 3 are the covariance biplots for the first two weeks (the electoral campaign) and the second two weeks (the post-campaign), respectively. According to the covariance biplots, the contents *pacts* and *Catalan independence*, whose extremes are close together in both periods, tend to maintain a proportional relationship: If one of the parties sends relatively more tweets about *pacts* than another, it also sends relatively more tweets about *Catalan independence*. Contrarily, the contents *unemployment* and *new technology*, whose extremes are far from each other in both periods, maintain a mutual ratio that is very different between parties. In some parties, the content *unemployment*/*economy-crisis* is much higher and for some it is much lower. Within periods, in Figure 2 the contents *education*, and *unemployment* and *economy/crisis* are near each other, but are far from the contents *welfare*, *international politics and terrorism*. On the other hand, in Figure 3 the contents *constitutional reform*, *education* and *unemployment* are the ones that are close together and *new technology*, *election*

campaign, *welfare*, *regeneration/change* and *terrorism* are the furthest from the contents *pacts* and *Catalan independence*.

In the covariance biplot in Figure 2 (first two weeks' analysis, the electoral campaign), if we project the parties orthogonally in the direction of the contents *corruption* and *regeneration/change*, it can be seen that the parties with the greatest proportion of both contents are Podemos and PSOE and those with the least, relatively speaking, are IU, PP and Ciudadanos. Similarly, if we take the same case in Figure 3, (second two weeks' data, post-campaign), it can be seen that there are substantial changes: regarding the content *corruption,* it is IU who covers this issue most, followed by PP and Ciudadanos, and at a significantly greater distance by Podemos and PSOE; while for *regeneration/change,* it is Podemos and PSOE who cover this issue most and Ciudadanos and PP least.

The relationships established between senders and contents describe the issues that seem to be more closely associated with each party, as well as those that are furthest from defining the composition of the parties' agendas. What derives from this reading of the compositional biplot could be considered as a depiction of the priming effect of each party and on the set of contents of the AS. If we understand that each vector (issue) is represented with varying emphasis by the different senders, we can map that certain issues do not only recur globally (Table 4), but also appear to be associated with a particular party, in the sense of their relative presence or even absence.

Figure 2 shows how the contents *corruption* and *regeneration/change* are narrowly associated, but beyond how these issues recur more frequently than others in the cases of Podemos and PSOE (i.e., agenda-setting in the true sense of the word), it allows us to visualize that within a context of rationality their affiliation for each party leads both of them to a priming effect described by the logic that the more often the content *corruption* recurs, the more often the content *regeneration/change* appears. The contents *pacts* and *Catalan Independence* in Figure 2 are also examples of this priming effect, especially in relation to the parties PP and Ciudadanos. Similarly, in Figure 3 the issues *politainment* and *unemployment* stand out, again in relation to PP and Ciudadanos. Furthermore, these last two examples, which manifestly define the priming effect for the most recurring contents for PP and Ciudadanos, are also in turn the contents that in both cases opposingly denote this effect for the parties Podemos and PSOE.

4.- Conclusions and discussion

By applying the CoDa biplot to the content of political communication, in this case via the Twitter accounts of political parties, we were able to visualise their agendas in an intuitive manner. The biplot also allowed us to focus the analysis on the relative importance of each type of content to see which parties emphasise which contents, how far parties are similar or different to one another, which contents parties treat in similar or dissimilar ways (priming) and which contents tend to be left out (spiral of silence).

The analysis of priming allowed us to see, for instance, how parties aiming at replacing PP in the government focused on corruption and regeneration/change prior to the elections, when attracting voters was of upmost importance. When it comes to justify pacts to the party bases, when such pacts may involve parties with lawsuits for

corruption, priming immediately focused on other issues, such as the need for the pacts themselves and Catalan independence, issues on which there was general agreement. Corruption is not the only topic which was relegated in a spiral of silence in the second period. Welfare and gender were also uncomfortable topics on which parties which were seeking pacts had profound disagreements, so that for the sake of the pacts the better option was to relegate them.

As regards limitations, the CoDa-biplot admittedly conveys an incomplete portrait of the spiral of silence. In a follow-up analysis, the group of issues discarded because of their small volume when the top15 were constructed must be considered. Last, following Neumann's foundations, the issues upon which none of the parties focus in their AS on Twitter are not even codified during the content analysis phase, although this would pose similar problems for the commonest statistical methods based on frequencies, rankings and correlations.

References

Aitchison, John (1982). "The statistical analysis of compositional data". *Journal of the Royal Statistical Society. Series B (Methodological)*, v. 44, n. 2, pp. 139-177. *http://www.jstor.org/stable/2345821*

Aitchison, John (1983). "Principal component analysis of compositional data". *Biometrika*, v. 70, n. 1, pp. 57-65. *https://doi.org/10.1093/biomet/70.1.57*

Aitchison, John (1986). *The Statistical Analysis of Compositional Data. Monographs on Statistics and Applied Probability*. London: Chapman and Hall.

Aitchison, John; Barceló-Vidal, Carles; Martín-Fernández, José Antonio; Pawlowsky-Glahn, Vera (2000). "Logratio analysis and compositional distances". *Mathematical Geology*, v. 32, n. 3, pp. 271-275. *https://doi.org/10.1023/A:1007529726302*

Aitchison, John; Greenacre, Michael (2002). "Biplots of compositional data". *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, n. 51, pp. 375-392. *https://doi.org/10.1111/1467-9876.00275*

Åström, Joachim; Karlsson, Martin (2013). "Blogging in the shadow of parties: exploring ideological differences in online campaigning". *Political Communication*, v. 30, n. 3, pp. 434-455. *https://doi.org/10.1080/10584609.2012.737430*

Bane, Kaitlin (2017). "Tweeting the Agenda". *Journalism Practice*, v. 12, n. 1, pp. 1-15. *https://doi.org/10.1080/17512786.2017.1413587*

Batista-Foguet, Joan Manuel; Ferrer-Rosell, Berta; Serlavós, Ricard; Coenders, Germà; Boyatzis, Richard Eleftherios (2015). "An alternative approach to analyze ipsative data. Revisiting Experiential Learning Theory". *Frontiers in Psychology*, v. 6, n. 1742. *https://doi.org/10.3389/fpsyg.2015.01742*

Berelson, Bernard (1952). *Content analysis in communication research*. New York: Hafner.

Blasco-Duatis, Marc; García Fernández, Nuria; Cunha, Isabel (2017). "Political opinion in the Spanish newspapers. Analysis of the period General Elections campaign in Spain, 2015". *Revista Latina de Comunicación Social*, n. 72, pp. 349-373. *https://doi.org/10.4185/RLCS-2017-1169*

Blasco-Duatis, Marc; Coenders, Germà; Saez, Marc (2018a). "Compositional visualization of intermedia agenda setting by the main media groups and political parties in the Spanish 2015 General Elections". *Revista Latina de Comunicación Social*, n. 73, pp. 264-292. *https://doi.org/10.4185/RLCS-2018-1255-14en*

Blasco-Duatis, Marc; Saez, Marc; García Fernández, Nuria (2018b). "Compositional representation (CoDa) of the agenda-setting of the opinion makers on politics in the main Spanish media groups in the 2015 General Elections". *Communication & Society*, v. 31, n. 2, pp. 1-28. *https://doi.org/10.15581/003.31.2.1-24*

Blasco-Duatis, Marc; Coenders, Germà; Saez, Marc (2018c). "Representación composicional (CoDa) de la agenda-setting de los opinantes sobre política en la prensa escrita española durante las Elecciones Generales de 2015". *Estudios sobre el Mensaje Periodístico*, v. 24, n. 2.

Bosch, Agustí; Durán, Iván (2017). "How does economic crisis impel emerging parties on the road to elections? The case of the Spanish Podemos and Ciudadanos". *Party Politics*, v. 20, n. 10, pp. 1-11. *https://doi.org/10.1177/1354068817710223*

Ceron, Andrea; Curini, Luigi; Iacus, Stefano (2016). "First −and second− level agenda setting in the Twittersphere: An application to the Italian political debate". *Journal of Information Technology & Politics*, v. 13, n. 2, pp. 159-174. *https://doi.org/10.1080/19331681.2016.1160266*

Conway, Bethany; Kenski, Kate; Wang, Di (2015). "The rise of Twitter in the political campaign: Searching for intermedia agenda-setting effects in the presidential primary". *Journal of Computer-Mediated Communication*, v. 20, n. 4, pp. 363-380. *https://doi.org/10.1111/jcc4.12124*

Cui, Di; Wu, Fang (2017). "Inter-media agenda setting in global news production: examining agenda attributes in newspaper coverage of the MH370 incident in the U.S., China, and Hong Kong". *Asian Journal of Communication*, v. 27, n. 6, pp. 582-600. *https://doi.org/10.1080/01292986.2017.1305426*

Egozcue, Juan José; Pawlowsky-Glahn, Vera (2011). "Basic concepts and procedures". In **Pawlowsky-Glahn, Vera; Buccianti, Antonella** (Eds.), *Compositional Data Analysis. Theory and Applications*, pp. 13-28. Nueva York: Wiley.

Egozcue, Juan José; Pawlowsky-Glahn, Vera; Mateu-Figueras, Gloria; Barceló-Vidal, Carles (2003). "Isometric logratio transformations for compositional data analysis". *Mathematical Geology*, v. 35, n. 3, pp. 279-300. *https://doi.org/0882-8121/03/0400-0279/1*

Ferrer-Rosell, Berta; Coenders, Germà (2016). "Destinations and crisis. Profiling tourists' budget share from 2006 to 2012". *Journal of Destination Marketing & Management*, v. 7, pp. 26-35. *https://doi.org/10.1016/j.jdmm.2016.07.002*

Frederick, Evan; Burch, Lauren; Blaszka, Matthew (2015). "A shift in set: examining the presence of agenda setting on twitter during the 2012 London Olympics". *Communication & Sport*, v. 3, n. 3, pp. 312-333. *https://doi.org/10.1177/2167479513508393*

Fry, Tim (2011). "Applications in economics". In **Pawlowsky-Glahn, Vera; Buccianti, Antonella** (eds.), *Compositional Data Analysis. Theory and Applications*, pp. 318-326. New York: Wiley.

Gabriel, K. Ruben (1971). "The biplot-graphic display of matrices with application to principal component analysis". *Biometrika*, v. 58, n. 3, pp. 453-467. *http://www.jstor.org/stable/2334381*

Geers, Sabine; Bos, Linda (2017). "Priming issues, party visibility, and party evaluations: The impact on vote switching". *Political Communication*, v. 34, n. 3, pp. 344-366. *https://doi.org/10.1080/10584609.2016.1201179*

Guo, Lei; Chen, Yi-Ning Kaherine; Vu, Hong; Wang, Qian; Aksamit, Radoslaw; Guzek, Damian; Jachimowski, Marek; McCombs, Maxwell (2015). "Coverage of the Iraq War in the United States, Mainland China, Taiwan and Poland". *Journalism Studies*, v. 16, n. 3, pp. 343-362.

https://doi.org/10.1080/1461670X.2014.885198

Iyengar, Shanto; Kinder, Donald (1987). *News that Matters*. Chicago: University of Chicago Press.

Jungherr, Andreas; Schoen, Harald; Jürgens, Pascal (2016). The mediation of politics through Twitter: An analysis of messages posted during the campaign for the German federal election 2013. *Journal of Computer-Mediated Communication*, v. 21, n. 1, pp. 50-68. *https://doi.org/10.1111/jcc4.12143*

Kogovšek, Tina; Coenders, Germà; Hlebec, Valentina (2013). Predictors and outcomes of social network compositions. A compositional structural equation modeling approach. *Social Networks*, v. 35, n. 1, pp. 1-10. *https://doi.org/10.1016/j.socnet.2012.10.002*

Krippendorff, Klaus (2004). *Content Analysis: An Introduction to its Methodology*. Thousand Oaks: Sage.

Lim, Jeongsub (2011). "First-level and second-level intermedia agenda-setting among major news websites". *Asian Journal of Communication*, v. 21, n. 2, pp. 167-185. *https://doi.org/10.1080/01292986.2010.539300*

Linares-Mustarós, Salvador; Coenders, Germà; Vives-Mestres, Marina (2018). "Financial performance and distress profiles. From classification according to financial ratios to compositional classification". *Advances in Accounting*, v. 40, pp. 1-10. *https://doi.org/10.1016/j.adiac.2017.10.003*

Lippmann, Waler (1922). Public Opinion. New York: Macmillan.

Lovell, David; Pawlowsky-Glahn, Vera; Egozcue, Juan José; Marguerat, Samuel; Bähler, Jürg (2015). "Proportionality: a valid alternative to correlation for relative data". *PLoS Computational Biology*, v. 11, n. 3, e1004075. *https://doi.org/10.1371/journal.pcbi.1004075*

Luo, Yunjuan (2014). "The Internet and agenda setting in China: The influence of online public opinion on media coverage and government policy". *International Journal of Communication*, n. 8, pp. 1289-1312. *https://doi.org/1932–8036/20140005*

Martín-Fernández, José Antonio; Palarea-Albaladejo, Javier; Olea, Ricardo (2011). "Dealing with zeros". In **Pawlowsky-Glahn, Vera; Buccianti, Antonella** (Eds.), *Compositional Data Analysis. Theory and Applications*, pp. 47-62. Nueva York: Wiley.

Martín-Fernández, José Antonio; Hron, Karel; Templ, Matthias; Filzmoser, Peter; Palarea-Albaladejo, Javier (2015). "Bayesian-multiplicative treatment of count zeros in compositional data sets". *Statistical Modelling*, v. 15, n. 2, pp. 134-158. *https://doi.org/10.1177/1471082X14535524*

McCombs, Maxwell (2004). *Setting the Agenda*. Cambridge: Polity Press.

McCombs, Maxwell, Shaw, Donald (1972). "The agenda-setting function of mass media". *Public Opinion Quarterly*, v. 36, n. 2, pp. 176-187. *https://doi.org/10.1086/267990*

Meraz, Sharon (2009). "Is there an elite hold? Traditional media to social media agenda setting influence in blog networks". *Journal of Computer Mediated Communication*, v. 14, n. 3, pp. 682–707. *https://doi.org/10.1111/j.1083-6101.2009.01458.x*

Naudé, Annelie; Froneman, Johannes (2003). "Trends in news agenda setting by the Sunday Times and Rapport in 2000". *Ecquid Novi: African Journalism Studies*, v. 24, n. 1, pp. 682-707. *https://doi.org/10.1080/02560054.2003.9653262*

Noelle-Neumann, Elisabeth (1993). *The Spiral of Silence: Public Opinion, our Social Skin*. Chicago: University of Chicago Press.

Parmelee, John (2013). "Political journalists and Twitter: Influences on norms and practices". *Journal of Media Practice*, v. 14, n. 4, pp. 291-305. *http://dx.doi.org/10.1386/jmpr.14.4.291_1*

Parmelee, John; Bichard, Shannon (2012). *Politics and the Twitter Revolution: How Tweets Influence the Relationship between Political Leaders and the Public.* Lanham: Lexington Books.

Pawlowsky-Glahn, Vera; Egozcue, Juan José; Tolosana-Delgado, Raimon (2015). *Modeling and Analysis of Compositional Data.* Chichester: Wiley.

Pearson, Karl (1897). "Mathematical contributions to the theory of evolution. On a form of spurious correlations which may arise when indices are used in the measurements of organs". *Proceedings of the Royal Society*, v. 60, n. 359-367, pp. 489-498. *https://doi.org/10.1098/rspl.1896.0076*

Perlmutter, David (2008). "Political blogging and campaign 2008: A roundtable". *The International Journal of Press/Politics*, v. 13, n. 2, pp. 160-170. *https://doi.org/10.1177/1940161208315742*

Rogstad, Ingrid (2016). "Is Twitter just rehashing? Intermedia agenda setting between Twitter and mainstream media". *Journal of Information Technology & Politics*, v. 13, n. 2, pp. 142-158. *https://doi.org/10.1080/19331681.2016.1160263*

Rubio-García, Raquel (2014). "Twitter y la teoria de la Agenda-Setting: mensajes de la opinión pública digital/Twitter and the Agenda-Setting theory: messages from the digital public opinion". *Estudios Sobre el Mensaje Periodístico*, v. 20, n. 1, pp. 249-265. *http://dx.doi.org/10.5209/rev_ESMP.2014.v20.n1.45230*

Stier, Stier; Bleier, Arnim; Lietz, Haiko; Strohmaier, Markus (2018). "Election Campaigning on Social Media: Politicians, Audiences, and the Mediation of Political Communication on Facebook and Twitter". *Political Communication*, v. 35, n. 1, pp. 50-74. *https://doi.org/10.1080/10584609.2017.1334728*

Sweetser, Kaye; Golan, Guy; Wanta, Wayne (2008). "Intermedia Agenda Setting in Television, Advertising, and Blogs During the 2004 Election". *Mass Communication and Society*, v. 11, n. 2, pp. 197-216. *https://doi.org/10.1080/15205430701590267*

Towner, Terri; Dulio, David (2012). "New media and political marketing in the United States: 2012 and beyond". *Journal of Political Marketing*, v. 11, n. 1-2, pp. 95–119. *https://doi.org/10.1080/15377857.2012.642748*

Tversky, Amos; Kahneman, Daniel (1973). "Availability. Heuristic for judging frequency and probability". *Cognitive Psychology*, v. 5, n.2, pp. 207-232. *https://doi.org/10.1016/0010-0285(73)90033-9*

Van den Boogaart, Karl Gerald y Tolosana-Delgado, Raimon (2013). *Analyzing Compositional Data with R.* Berlin: Springer.

Van Eijnatten, Frans; Van der Ark, Andries; Holloway, Sjaña (2015). "Ipsative measurement and the analysis of organizational values: an alternative approach for data analysis". *Quality & Quantity*, v. 49, n. 2, pp. 559-579. *https://doi.org/10.1007/s11135-014-0009-8*

Vives-Mestres, Marina; Martín-Fernández, José Antonio; Kenett, Olwing (2016). "Compositional data methods in customer survey analysis". *Quality and Reliability Engineering International*, v. 32, n. 6, pp. 2115–2125. *https://doi.org/10.1002/qre.2029*

Weimann-Saks, Dana; Ariel, Yaron; Malka, Vered; Avidar, Ruth (2016). "Trends in public and media agenda-setting during the 2015 Israeli elections". *Israel Affairs*, v. 22, n. 3-4, pp. 727-742, *https://doi.org/10.1080/13537121.2016.1174386*

Wimmer, Roger; Dominick, Joseph (2006). *Mass Media Research: an introduction.* USA: Thomson Wadsworth.

Table 1.- Closed geometric means of the top15 issues

Top15 issues	Closed geometric means
pacts	0.063
Catalan independence	0.064
gender	0.067
terrorism	0.010
corruption	0.109
politainment	0.066
economy/crisis	0.126
unemployment	0.092
education	0.043
regeneration/change	0.110
constitutional reform	0.057
welfare	0.056
election campaign	0.113
new technology	0.010
international politics	0.014

Figure 1.- Form biplot of the top15 issues in the electoral campaign period and the post-electoral campaign period
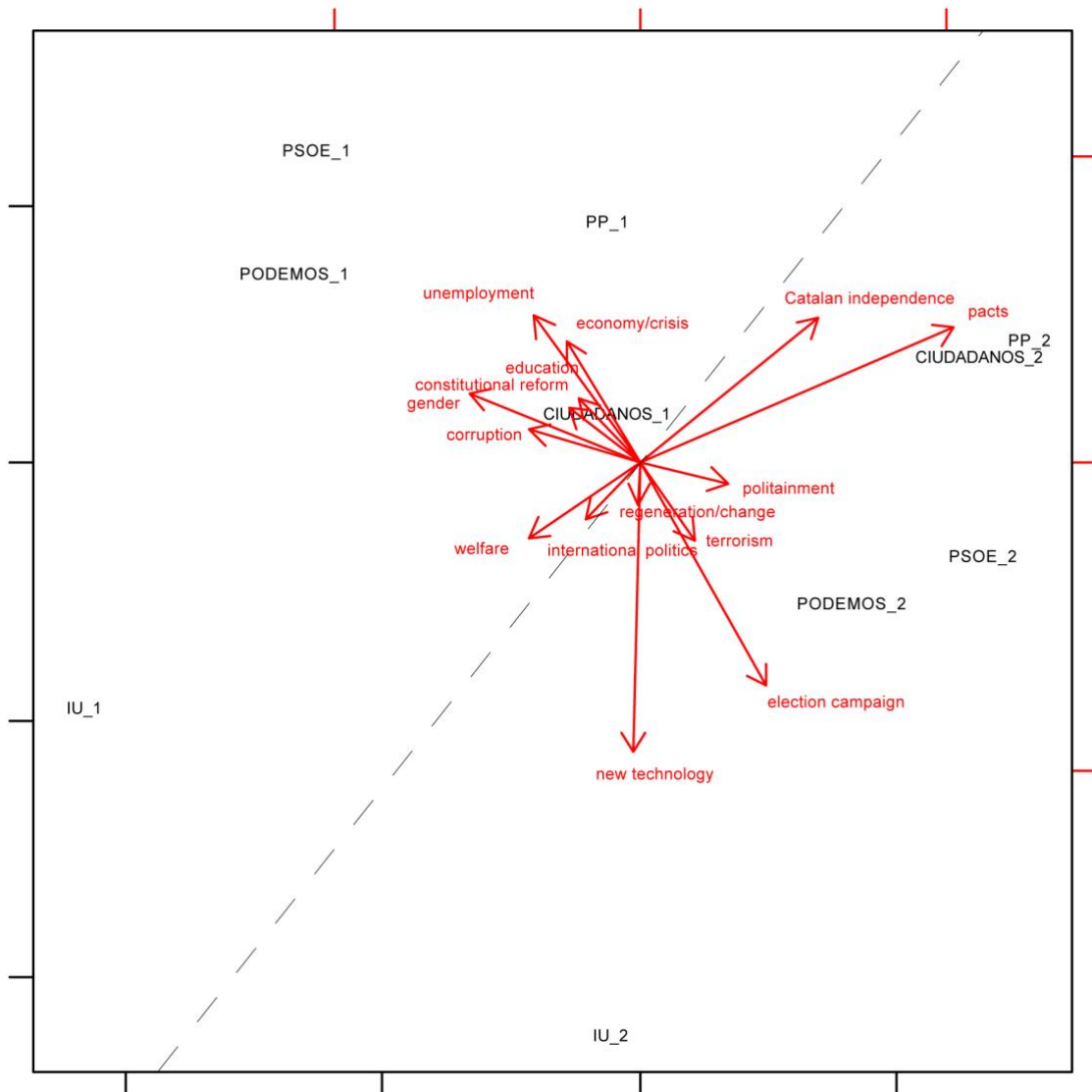
Figure 2.- Covariance biplot of the top issues in the electoral campaign period
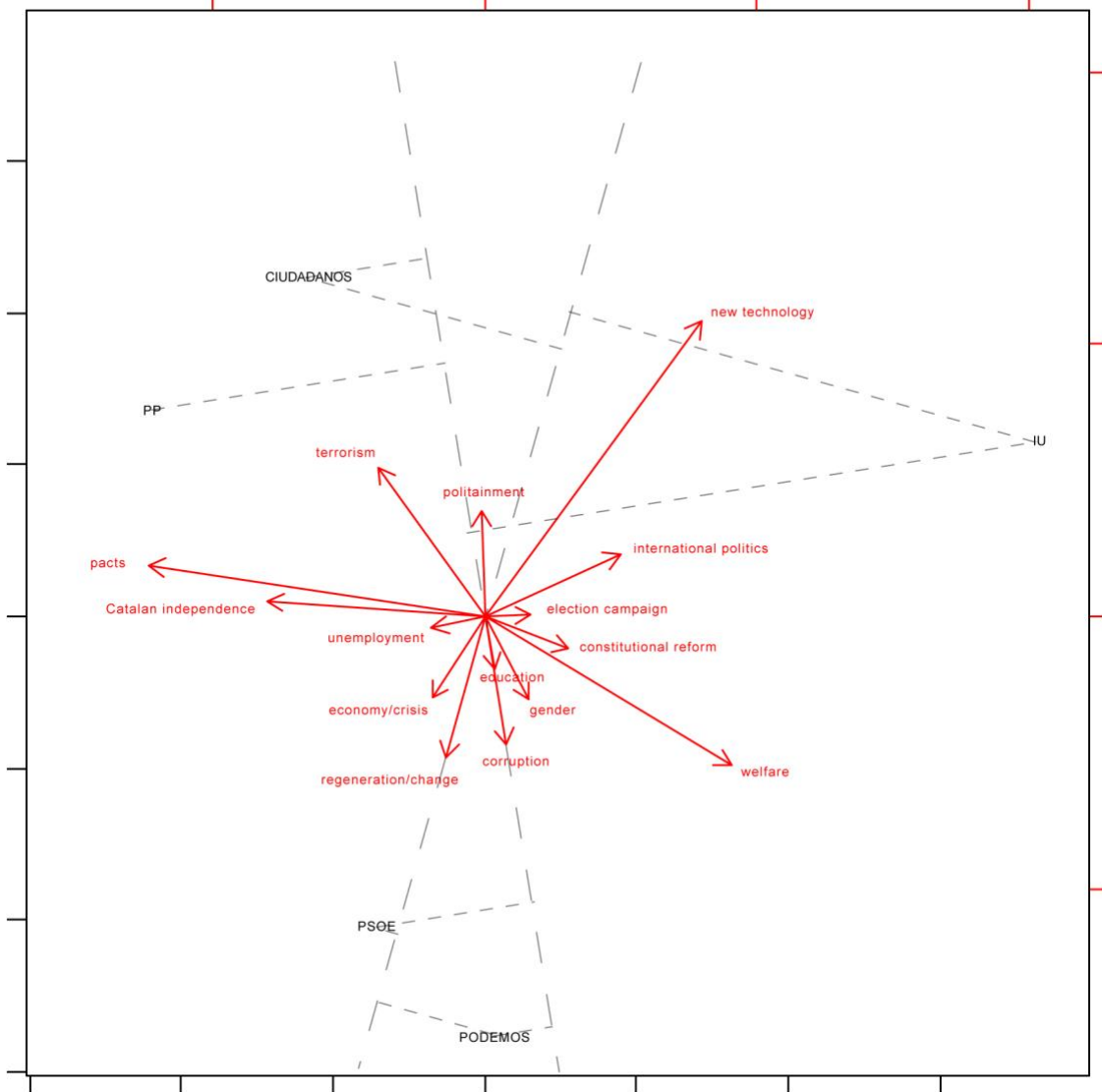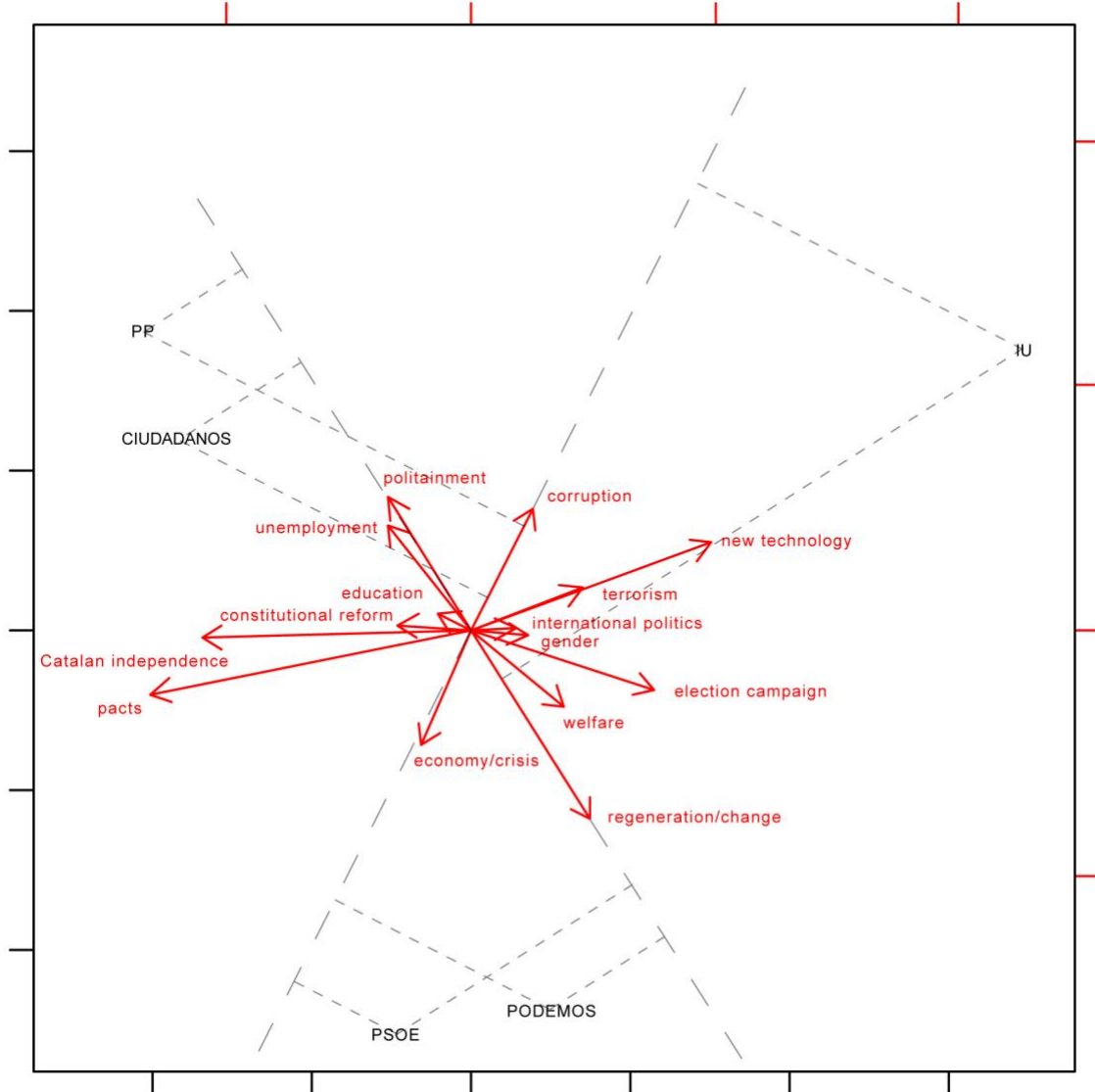
Figure 3.- Covariance biplot of the top issues in the post-electoral campaign period

4.1.4. Artículo IV

Blasco-Duatis, M., Sáez, M., Fernández García, N. (2018). Compositional representation (CoDa) of the agenda-setting of the opinion makers on politics in the main Spanish media groups in the 2015 General Elections. *Communication & Society*, 31, 2, 1-24.

COMMUNICATION & SOCIETY

Marc Blasco-Duatis
marc.blasco@udg.edu
Research Group on Statistics,
Econometrics and Health
(GRECS). University of Girona,
Spain.

Marc Saez
marc.saez@udg.edu
CIBER of Epidemiology and
Public Health (CIBERESP).
Madrid, Spain.

Nuria Fernández García
nurfergar@gmail.com
Department of Journalism and
Communication Studies.
Autonomous University of
Barcelona, Spain.

Compositional representation (CoDa) of the Agenda-setting of the political opinion makers in the main Spanish media groups in the 2015 general election

Abstract

This article presents an innovative proposal to represent the agenda-setting of the main Spanish media groups (RTVE, Prisa, Vocento, Unidad Editorial, COPE, Atresmedia, Planeta, Godó, Mediaset España and Libertad Digital) in the context of the 2015 Spanish general election. The study uses a quantitative method based on a content analysis of the main Spanish radio and TV programmes with political opinion spaces and the main newspapers linked to these media groups. Furthermore, the compositional methodological approach the CoDa-biplot is used to visualise and emphasise the relative salience of the components under study. The article not only provides a mapping of the agenda of the main media groups in the electoral context, but it also reaches the representation of the effects of priming and the spiral of silence in the proportional study of the issues and senders of the agenda.

Keywords
Agenda-setting, biplot, compositional data, media groups, priming, spiral of silence.

1. Introduction[1]

Measuring agenda-setting, developed from the media system of the different issues that occupy spaces of debate on the media stage, has traditionally been approached by statistical methods of absolute values at the service of correlating the pairing sender-issues. With over 400 empirical works on the AS theory published worldwide (McCombs, 2006), it has become one of the main tools used by communication science to study the media universe and its interaction with the different social actors that shape public opinion.

The traditional postulates of agenda-setting are based on the study of the hierarchisation of the issues the mass media addresses to determine the relative importance of the topics exposed to public opinion through reiteration and content positioning. This research applies compositional analysis (CoDa), as proposed by Blasco-Duatis et al. in the area of communication (2018), with the aim of surpassing Spearman's correlations and focusing interest on the relative salience of the parts of a whole (Aitchison, 1986). The study particularly focuses on the compositional biplot as a data visualisation tool that tells us which issues are prioritised, who their senders are and the relations between them, bearing in mind that the salient information is the relative volume of each issue for each sender.

The case study in this work is the AS proposed by the opinion makers [2] that participate in political debates on the main Spanish TV channels and radio stations and that write opinion articles in the main general information newspapers. The data is amalgamated into a global study to visualise the AS of the political opinion makers of the main Spanish media groups during the period of the Spanish general election held on 20th December 2015. With the media groups RTVE, Mediaset España, Atresmedia, Prisa, Unidad Editorial, Vocento, Godó, Libertad Digital, Planeta and COPE we approach a content analysis of the issues that aroused public opinion in the two-week period prior to the election (the electoral campaign) and the two-weeks after the election (the post-campaign), and these data are then visualised by means of the CoDa-biplot. This method also allows us to approach the representation of the effects of priming (based on associative-activation among a group of issues that end up being more influential than others) and the spiral of silence (the issues that are ommitted and/or replaced by the logic derived from the hierarchy process of agenda-setting).

2. Media groups, agenda-setting and the effects of prioritisation/alienation

The current Spanish media system is structured on a small number of large media groups, which are subject to exhaustive control both in terms of the press and the audiovisual industry in a similar way to what has happened in neighbouring countries over the last decade, and which according to the academic Pascual Serrano (2010) can largely be explained by the following four precepts: i) a concentration typical of the media universe, which is based on a very limited range of large groups that dominate communication and culture; ii) a business logic structured by the processes of *financialisation* (massive debt

[2] Opinion makers are understood to be the group of actors that are invited by the mass media in the context of media debate to participate by manifesting an idea or opinion (in particular on current affairs talk shows on TV or the radio or as columnists in the press).

backed by the capital markets) which calls for the homogeneity of these groups in their strategies and ideological view of the world; iii) a hegemonic disposition about the logics of mass social communication stemming from the financial internationalisation of the large groups and their associated investment funds; and last, iv) legislation that has looked for ease of application rather than to exercise real control.

At the beginning of the 1980s, the Dutch professor Cees Hamelink (1984) developed a seminal work on funding and international communication. The conclusion of this pioneering research was that the transnational information industry and the transnational banking system are highly oligopolistic, the first out of huge financial necessity and the second driven by big interests and informative needs (see Almirón, 2007). The first point that must be made regarding this scenario is that the sustained growth of the power of the markets over economic dynamics - fed by a neoliberal ideology of the financial elites' growing economic and political power - has brought about what Santamaría (2012) considers as the impasse of a business management model based on the 'stakeholder' - where control of the company is exercised internally by a Board of Directors and their managerial mandate - to one based on a type of 'shareholder' - where control is exercised externally by liberalised financial markets and where business logic centres on maximising the value of the capital invested. This phenomenon, known as financialisation in the economic literature, also explains what has happened in cultural industries - and particularly in the birth of the above- mentioned media groups - with their business restructuring processes fostered largely by the nature of the stock markets (Plihon & Ponssard, 2001).

Of the set of measures driven by the financial markets that have affected the Spanish media system, the most apparent are mergers and acquisitions, operations that especially appeal to 'increasing share value by taking advantage of the positive synergies of the merged companies' (Santamaría, 2012). The same author points out that in the Spanish context these operations have also impacted significantly on the pluralism of the media 'limiting the right of the population to access communication' (Zallo, 2011: 76), intervening in both the media agenda (very conditioned in a period of reduced advertising on the part of banks and the IBEX35 companies) and the working conditions of teams of professionals (in terms of restructuring and redundancies.)

This media concentration into a small, powerful line-up of media groups closely related to the financial sector also encourages a trend towards the homogeneity of both information and the ways it is presented. Under the same logic that there are topics, for example health and science, that are rarely assigned a specific space or independent coverage in the media sphere (Revuelta, 2006), there is another group of issues (that include politics and the economy, among others), that manage to monopolise and proliferate within the multiplicy of media formats in the system - for example, debates - accompanied by what some time ago was considered as an homogenising exercise designed to address 'a minimum common denominator of opinions for the general public' (Blasco-Duatis et al., 2017).

The main media outlets operating in Spain, which comprise the sample group in this research, can be divided into five groups depending on their ownership status: RTVE group, the state-owned public corporation; Atresmedia (including Planeta-DeAgostini), Mediaset España, Prisa and Vocento, all publicly traded companies; Godó group, owned exclusively by a single family; COPE group, owned mainly by the Spanish Episcopal Conference; and the groups Unidad Editorial and Libertad Digital which, although they have shareholders in common, work from independent group structures that belong entirely to foreign investment groups. And yet this enormous concentration of media outlets not only works against informative pluralism, but also in itself clearly outlines a two-party framework wherein two large media groups (Mediaset España and Atresmedia), majority shareholders in the two benchmark Spanish TV platforms, generated (according to data provided by

Infoadex[3]) not only more than 80% of the income from TV advertising in 2016 and more than 50% of the total audience (according to data from Kantar Media for 2016[4]), but also, together with Prisa and Mediapro, overwhelmingly controlled the contents market (series, films, rights to broadcast sports, and so on).

This contextualisation essentially describes the relationship established over time between the power elites (political, economic, business, etc.) and the media, a relationship characterized by mutual interdependence in their strategies to attain their own specific objectives: the first to ensure favourable media coverage, and the second to make sure that the issues chosen by the elites reach their audiences (Blumler & Gurevitch, 1995; Blumler & Kavanagh, 1999). More recently, the main research on this subject has challenged these precepts, demonstrating that the power elites, in particular in the political arena, are becoming increasingly dependent on the media as a consequence of *mediatisation*, a term that refers to the level of independence there is between the power elites and the media (Blumler & Kavanagh, 1999; Marcinkowski, 2014; Mazzoleni & Schulz, 1999; Strömbäck, 2008). It is precisely these correlations that define the confrontation between these forces, which are also subject to the projection of the media, that subsequently reaches society.

This homogenisation of the ideological view of the world as one of the determinant axes of the proliferation of media groups (Serrano, 2010) poses a direct question to communication science academics and, in particular, to those who study the procedures derived from the AS research model. By definition, the AS theory establishes that the media defines the cognitive map of society based on how people experience the world they live in (Lippman, 1922), fostering a strong correlation between the emphasis the mass media places on certain matters and the importance the public attaches to them (Cohen, 1963; McCombs & Shaw, 1972). The complexity of social events subject to a non-stop barrage of information has overwhelmed citizens in terms of the way they see the world around them, leading the mass media to create a link between individuals and the world, providing them with a 'second-hand reality structured by the information journalists provide about these events and situations' (McCombs, 2006: 24).

In this context, the salience of certain issues in keeping with citizens' concerns makes them focus their attention, thoughts and actions on these issues, thus conferring the first level of public opinion forming. These issues are precisely the ones that society must think about and form an opinion on and are especially important in AS, describing the process known as thematisation. As a central element in the theoretical study of AS, this process has lead several theorists to base their studies on the genesis of the concept (Luhmann, 1973; Shaw et al., 1977; Lang & Lang, 1981; Dearing & Rogers, 1996; McCombs, 2006; Sábada, 2008). All of them agree that the importance of AS is defined from the informative hierarchy of the issues that are subject to media interest and presented to the public. The presence or absence of an issue on the agenda will determine the priority of interests and give preference to what is put forward for public debate. The 'prioritised' issue will thus be incorporated into the order of the day in the public space in a high-profile context which, in the words of (Marletti, 1982: 210) transforms 'a thematised content into media news,'

The mass media has been shown to be an extremely powerful tool for shaping the dominant mentality in contemporary societies. It is here, in how different actors attempt to influence the media agenda, where agenda-setting has evolved into agenda-building, involving not only a media hierarchy process before the public, but also the capacity of the

---

[3] Access to the Infoadex study 2016: http://bit.ly/2lzBiak
[4] *Kantar Media* is the data investment management arm of the British multinational company WPP (*Wire and Plastic Products*) and one of the largest information and consultancy groups in the world: https://www.kantarmedia.com/es

elites to earn media attention and use it as a stage for their respective agendas, managing to get their proposals and objectives championed by them (Valera Ordaz, 2014). This interaction between the power elites (politicians, business people, the media, and so on) is what makes Hallin & Mancini (2004: 86) include Spain in the archetype *polarised pluralism*, which they describe in their comparative study of media models as where an historical press tradition ends to make way for ideological battles and a tendency for media groups to support a particular political party. It is a framework which also denotes a high degree of correspondence between the structure of the media system and the power systems (Hallin & Mancini, 2004: 25).

The mass media plays a pivotal role in exercising ideological problematisation in the public sphere and on public opinion. As we have seen, it is not so much the media's direct influence on the point of view and opinions of citizens, but the power they wield to establish the issues put forward for debate. One if the most important conceptualisations of the effects produced by the mass media on public opinion in terms of this study is the priming effect. This perspective, which has its origins in cognitive psychology and was applied to the AS theory later, posits that the power of the media is such that it is capable of establishing the criteria that serve as receptors to develop the capacity to pass judgement on the public reality (Iyengar & Kinder, 1987). Priming is considered as closely related to AS, mainly because it explains how the public shapes its opinions based on the most high-profile events, which correlates directly with 'the ability to bring examples and associations to mind' (Tversky & Kahneman, 1973: 208). The concept was originally defined from the prioritisation or prominence given to a set of issues to serve as benchmarks to evaluate the different matters present in public life. Iyengar & Kinder (1987: 4 and 114), the intellectual fathers of transferring the concept to the area of political communication, point out that the importance of the process of prioritising certain issues for the public lies in how it manages to isolate minority opinion and reinforce the salient, or benchmark, issues.

At this point, the theory of the spiral of silence posited by Noelle-Neumann (2003) must be mentioned because it is based on this principle of alienating minority views and is also linked with the hierarchisation processes practiced in AS, where certain issues are ommitted or prioritised. The spiral of silence is based on four premises: first, that alienation is perceived as a innate fear in humans; second, that society threatens to isolate citizens that leave the mainstream; third, that this fear leads citizens to ascribe to dominant trends in public opinion; and fourth, that this all has an adverse effect on freedom of expression (Noelle-Neumann, 2003). Given this fear of rejection and social alienation, citizens are embroiled in a constant need to check what opinions and ways of behaving are acceptable or rejected to determine their own conduct.

In short, this research takes the fundamentals of the AS theory, in addition to the effects of priming and the spiral of silence, to mediate the compositional representation of the AS of the main Spanish media groups during the 2015 general election. The singular nature of this proposal, not only in that it represents the AS of the main Spanish media groups but also in that it based on a new methodological framework little explored in this area, means that the evolution from a traditional focus for analysing content categories in the media (absolute and correlation methods) to a compositional method that prioritises the relative differences between sender and content categories should be taken into special consideration.

3. Traditional approach to analysing content categories in the media.

As indicated by Blasco-Duatis et al. (2018), the very nature of the AS theory has meant that content analyses have generally focused on the relative or comparative importance of some contents over others. It is assumed that some media or social actors are more active than

others regarding certain issues, leading to a general study of the relative volume of information about issues to the detriment of the detailed analysis of content. In most cases, this is evidenced in the formulation of hypotheses and research questions expressed in comparative, relative or competitive terms. Examples of research questions that clearly allude to a comparative focus about agenda-setting in different media are plentiful: 'The journalistic *relevance* of international events may be the result of an AS process among the media' (Golan, 2006); 'What are the issues *emphasized* in the online public agenda, the media agenda and the policy agenda?' (Luo, 2014: 1293); 'What issues do the candidates in the televised campaign debates *emphasise*?' (Trilling, 2014), "The MH370 incident quickly *dominated* the news agenda across many countries" (Cui and Wu, 2017: 2), 'Does the media agenda have *more influence* than the opposition parties over setting parliamentary control questions?   (Vliegenthart et al., 2016), 'The assumption that news media *emphasize and highlight* certain events' (Weimann-Saks et al., 2016: 730), 'What were the *most important* attributes of the Iraq War in the newspaper coverage of the United States, Mainland China, Taiwan and Poland?' (Guo et al., 2015: 349), 'How did the news agendas of the Sunday Times and Rapport differ on their front pages, with regard to their *lead stories*?' (Naudé & Froneman, 2003: 87), 'What were the *most frequent* policy issues (issue agenda) discussed by the media regarding each object nation' (Besova & Cooley, 2009: 225). The italics are ours.

The simplest way to assess similarity among senders of political information according to the relative importance of the content categories they send (issues) and to determine which of these categories contribute to their differences, is to compare the frequencies of the top contents (e.g., author et al., 2017; Guo et al., 2015; Jungherr et al., 2016).

Table 1 contains fictional data for six senders (E1 to E6) and their top three content frequencies (C1 to C5). For the sake of simplicity, only the similarity of E1 to all the other senders is assessed. To all intents and purposes, E2 looks identical to E1, even though the way the data are presented in absolute terms makes this difficult to discern at first glance. E3 also seems to be identical to E1. The first two categories in E4 and E5 are the same as in E1, but they differ in the content ranked third, while there is nothing to indicate whether one or the other is more dissimilar from E1. E6 has the same top three issues as E1, albeit with different frequencies. A key question misleading how a table like this is interpreted is that the different senders are compared based on a different set of issues. In other words, we do not know the frequencies of the omitted issues, which may be just marginally below the frequency of the third issue or may have a completely insubstantial frequency.

Table 1. Fictional top3 comparison of the six senders across the content categories C1 to C3 based on absolute frequency

	E1	E2	E3	E4	E5	E6
First	C1-150	C1-50	C1-150	C1-150	C1-150	C1-185
Second	C2-90	C2-30	C2-90	C2-90	C2-90	C3-60
Third	C3-60	C3-20	C3-60	C5-60	C4-60	C2-55

Source: Compiled by the author

The upper part of Table 2 is a comparison of the six senders based on the entire set of content categories that appear in the top three lists of at least one sender. In this way, we ensure that mutual comparisons among senders are made on a common basis. For ease of interpretation, the central part of the table contains proportions instead of absolute frequencies. Some authors prefer to use rankings (e.g., Besova & Cooley, 2009; Cui & Wu, 2017; Lim, 2011; Ragas & Kiousis, 2010), as shown in the lower part of the table.

Table 2. Fictional full comparison of the six senders across content categories C1 to C5 based on absolute frequencies (top), relative frequencies (centre) and rankings (bottom)

	E1	E2	E3	E4	E5	E6
C1	150	50	150	150	150	185
C2	90	30	90	90	90	55
C3	60	20	60	50	50	60
C4	45	15	10	10	60	45
C5	15	5	50	60	10	15
C1	0.417	0.417	0.417	0.417	0.417	0.514
C2	0.250	0.250	0.250	0.250	0.250	0.153
C3	0.167	0.167	0.167	0.139	0.139	0.167
C4	0.125	0.125	0.028	0.028	0.167	0.125
C5	0.042	0.042	0.139	0.167	0.028	0.042
C1	1	1	1	1	1	1
C2	2	2	2	2	2	3
C3	3	3	3	4	4	2
C4	4	4	5	5	3	4
C5	5	5	4	3	5	5

Source: Compiled by the author

From the second part of *Table 2* it can be deduced that sender 2 is identical to sender 1. On the other hand, sender 3 is markedly different. In comparison to sender 1, sender 3 has a threefold increase in C5 (0.139 / 0.042 = 3.33) and in comparison to sender 3, sender 1 has a fourfold increase in C4 (0.125 / 0.028 = 4,50).

It is also apparent that sender 4 is more different from sender 1 than sender 5 is. Compared to sender 1, sender 4 has a fourfold increase in C5 (0.167 / 0.042 = 4.00) and compared to sender 4, sender 1 has a fourfold increase in C4 (0.125 / 0.018 = 4.50). This is especially relevant in terms of the spiral of silence, which focuses on issues that form a minority content.

Regarding sender 6, the differences with respect to sender 1 seem sizeable in absolute terms, but not so much in relative terms, because they occur in content categories that have high proportions in both senders (0.514 / 0.417 = 1.23 and 0.250 / 0.153 = 1.64). Thus, if the research questions focus on the relative importance of the contents, then this must be duly taken into consideration when analysing the data.

While the second part of Table 2 could constitute a solid focus of analysis and similar tables are often used (e.g., Blasco-Duatis, 2017; Frederick et al., 2015; Luo, 2014; Min, 2004; Naudé & Froneman, 2003; Rogstad, 2016; Rubio-García, 2014), there is a general lack of interest in how content categories contribute to generating differences among senders, be they relative or absolute.

Such differences (or similarities) are often assessed by means of either Spearman's rank correlations among senders based on the lower part of Table 2 (e.g., Conway et al., 2015; Cui & Wu, 2017; Lim, 2011; Luo, 2014; Ragas & Kiousis, 2010; Weimann-Saks et al., 2016) or other types of rank correlations (Min, 2004). This is tantamount to taking neither relative or absolute differences into consideration, but only the hierarchical order, thus wasting any other information. For instance, according to Spearman's correlations, in *Table 3* sender 3 is as similar to sender 2 as to sender 4.

Table 3. Spearman's rank correlations

	E1	E2	E3	E4	E5	E6
E1	1,000	1,000	.900	.700	.900	.900
E2	1,000	1,000	.900	.700	.900	.900
E3	.900	.900	1,000	.900	.700	.800
E4	.700	.700	.900	1,000	.600	.500
E5	.900	.900	.700	.600	1,000	.700
E6	.900	.900	.800	.500	.700	1,000

Source: Compiled by the author

4. Compositional analysis

Compositional Data analysis (CoDa) is the standard statistical method used when data only contain information about the relative importance of the parts of a whole. The CoDa tradition started with Aitchison's seminal work (1982, 1986) on chemical and geological compositions where only the proportion of each part or component is of interest, since absolute amounts are irrelevant and only tell about the size of the chemical or soil sample (e.g., Buccianti et al., 2006). Nowadays, CoDa spans almost all the hard sciences and has started to be used in several fields of the social sciences, such as education (Batista-Foguet et al., 2015), the economy (Fry, 2011), marketing (Vives-mestres et al., 2016), accounting (Linares-Mustarós et al., 2018), tourism (Ferrer-Rosell & Coenders, 2016), values (van Eijnatten et al., 2015), social networks (Kogovšek et al., 2013), time use (Martín-Fernández et al., 2015a) and election studies (Egozcue & Pawlowsky-Glahn, 2011; Liscano Fierro & Ortiz Rico, 2017). As far as we are aware, up to now CoDa has only been applied once to the analysis of the agenda-setting of political communication and the media (Blasco-Duatis et al., 2018). Content analysis in the study of the media and media groups and the analysis of the AS established in the communication of these media, pose similar problems in all respects to those encountered in chemical and geological analyses. Absolute data are irrelevant and mainly indicate the overall popularity of the sender or the content. In this sense, only the proportions of each content category or the relative size of one type of content in relation to another are truly informative.

In the last three decades, CoDa has provided a standardized toolbox for statistical analyses whose research questions are concerned with the relative importance of magnitudes. Dedicated user-friendly software has started to appear (van den Boogaart & Tolosana-Delgado, 2013; Palarea-Albaladejo & Martín-Fernández, 2015; Thió-Henestrosa & Martín-Fernández, 2005), as well as accessible handbooks (van den Boogaart & Tolosana-Delgado, 2013; Pawlowsky-Glahn & Buccianti, 2011; Pawlowsky-Glahn et al., 2015) What follows is a brief outline of the method.

Let composition x be a real positive vector:

$$\mathbf{x} = \left(x_1, x_2, ..., x_D \right) \quad \text{with} \quad x_j > 0 \quad \text{for all} \quad j = 1, 2, ..., D, \tag{1}$$

where D is the number of components, in our case, content categories. To focus on the relative importance of the components, $\mathbf{x}$ is *closed* to a unit sum so that after its closure $\mathbf{z}$ contains proportions of each content category.

$$\mathbf{z} = C(\mathbf{x}) = \left(\frac{x_1}{S}, \frac{x_2}{S}, ..., \frac{x_D}{S} \right) = \left(z_1, z_2, ..., z_D \right)$$

$$\text{with } z_j > 0 \quad \text{for all } j = 1, 2, ..., D; \quad S = \sum_{j=1}^{D} x_j; \quad \sum_{j=1}^{D} z_j = 1. \tag{2}$$

Because of the restriction of fixed sum, most traditional statistical tools, such as mean, correlation and distance, are to a greater or lesser extent meaningless when applied to $\mathbf{z}$.

A proper measure of the centre of a sample of n compositions is the closed geometric mean. If g_j is the sample geometric mean of the component z_j for all n compositions, the centre is expressed as $C(g_1, g_2, ..., g_D)$.

Euclidean distances among individual compositions (senders) are also meaningless (Aitchison et al., 2000). Euclidean distance considers that the pair of proportions 0.01 and 0.02 are as mutually distant as 0.11 and 0.12, while in the first pair the difference is 100% and in the second it is less than 10%.

4.1. Transformations, association and distance

The most common CoDa approach is to express the original compositional of D components in log-ratios among components (Aitchison, 1986; Egozcue et al., 2003). The main arguments for log-ratios are that they constitute a natural way of distilling the information about the relative size of components and form the basis for defining association and distance in a meaningful way. Log-ratios may, for instance, be computed among each part and the geometric mean of all the components, in the so-called *centred log-ratios:*

$$\ln \left(\frac{z_j}{\sqrt[D]{z_1 z_2 ... z_D}} \right)$$

$$\text{with } j = 1, 2, ..., D. \tag{3}$$

Aitchison's distance between two senders' compositions $\mathbf{z}$ and $\mathbf{z}^*$ considers that zero distance corresponds to identical content proportions and that two senders are more distant from each other when the difference between their log-ratios is likewise larger. Aitchison's distances can be expressed as Euclidean distances calculated not from the original composition, but from the centred log-ratios.

$$\mathrm{d}\left(\mathbf{z}, \mathbf{z}^* \right) = \sqrt{ \sum_{j=1}^{D} \left(\ln \left(\frac{z_j}{\sqrt[D]{z_1 z_2 ... z_D}} \right) - \ln \left(\frac{z_j^*}{\sqrt[D]{z_1^* z_2^* ... z_D^*}} \right) \right)^2 } \tag{4}$$

Using log-ratios attaches greater importance to differences in content categories with low proportions.

4.2. Replacement of zeros

As is well known, calculating log-ratios implies that $\mathbf{z}$ cannot contain zero values. If the $\mathbf{z}$ vector contains zeros, they must be replaced beforehand (Martín-Fernández et al., 2011). When, like in this case, the data are counts of frequencies, the common framework for replacing the zeros is the *Bayesian-multiplicative approach* (Martín-Fernández et al., 2015b; Pierotti et al., 2009) In the Bayes-Laplace's rule, the z values are replaced with:

$$z'_j = \frac{1}{S + D}$$, for $z_j = 0$ (5)

Non-zero **z** values are reduced by means of the so-called multiplicative replacement to preserve the unit sum and the ratios among non-replaced components (Martín-Fernández et al., 2003):

$$z'_j = z_j \left(1 - \sum_{z_j=0} z'_j \right)$$, for $z_j > 0$ (6)

The fact that zero replacement methods assume that most of the values are greater than zero must be considered. For alternative treatment methods for data with prevalent zeros see Greenacre (2011).

4.3. The CoDa biplot

Like standard data, compositional data require visualization tools to help researchers interpret large data tables with various senders and many content categories. To this end, Aitchison (1983) extended the well-known principal component analysis procedure to the compositional case. The extension boils down to submitting centred log-ratios (3) to a standard principal component analysis based on the covariance matrix. Such is the case that, once the zeros have been replaced and the log ratios calculated, any programme or software package capable of carrying out a principal component analysis based on the covariance matrix can be used.

Together with Gabriel's (1971) biplot, which represents cases and variables together in a principal component analysis, this served as the basis for Aitchison and Greenacre (2002) developing CoDa biplots.

A CoDa biplot can be understood as the most accurate representation possible of a compositional table in two dimensions. As in standard principal components, overall biplot accuracy can be assessed from the percentage of explained variance for the first two dimensions. More specifically, the form biplot optimises the representation of Aitchison's distances among senders. The content categories appear as rays emanating from a common origin and senders appear as points. The interpretation is as follows (see Aitchison & Greenacre, 2002; van den Boogaart & Tolosana-Delgado, 2013; Pawlowsky-Glahn et al., 2015 for further details):

1. Distances between two points are approximately proportional to Aitchison's distances (4) between the two senders. Senders with similar content compositions appear close together.
2. The lengths of the content category rays are proportional to the quality of the representation of contents in the two-dimensional space, whose average across all the contents is the percentage variance explained by the first two dimensions. Unlike in the classic biplot, the angles between the rays have no interpretation.
3. The orthogonal projection of the senders in the direction defined by a ray shows an approximate ordering of the importance of that content category for each sender and can be used to show how the content category contributes to differentiating senders.
4. The origin of all the rays is both the coordinate centre and the geometric mean. A sender close to this centre behaves like the geometric average of all the senders with respect to their content share.

In this article, we use the biplot as a visualisation technique to represent the relations between senders and contents, using the above-mentioned rules of interpretation. Obviously, principal component analysis can also be used as a data reduction tehcnique, and the coordinates of the senders on the dimensions can be used as variables in later statistical analyses. In this case, like in standard principal components, the statistical analyses are interpretable to the same extent the dimensions are and each dimension must be interpreted from the coefficients of their associated eigen vector. Positive coefficients of a content in the eigen vector corresponding to a dimension indicate that the coordinate of the sender on the dimension tends to increase when the relative importance of the content likewise increases.

For all the analyses we use the functions prcomp and biplot of the R programme, but once the data is transformed any statistical programme that allows for extracting principal components from covariance matrices will give identical results, as mentioned above.

5. Content analysis

To obtain the visualization (mapping) of the AS of the opinion makers of the main Spanish media groups'during the period of the Spanish general election in 2015, we use a mixed methodology based on content analysis (Berelson, 1952; Krippendorff, 2004; Wimmer et al., 2006) and CoDa analysis in the area of communication (Blasco-Duatis et al., 2018). Regarding the content analysis, the set of media groups selected for this study were subject to the following delimitations:

1. Delimiting the time: The study focuses on the the 2015 Spanish general election, and more specifically on the 30-day period from the beginning of the electoral campaign on 4th December 2015 to 4th January 2016, which were the two weeks prior to and immediately following the election held on 20th December 2015). A balance is thereby obtained between the analysis of the days of the electoral campaign itself and the days of the post-electoral campaign, omitting the day of the election itself due to the media groups altering their standard programming on that day.

2. Delimiting the space: The media groups with different types of media (TV channels, radio broadcasters and/or the press) with integrated coverage across the whole country that imparted general information (or thematic information about political opinion) and with political opinion/discussion spaces were selected. To ensure the reliability of this choice, the media outlets were also selected based on data gathered in the General Media Study (EGM) from October 2015 to May 2016 [5] and compared with data from the OJD platform (Audit Bureau of Circulations) and the *Kantar Media* study. The following premises were also considered: i) Regarding the press, all the generalist newspapers with integrated coverage across the whole country were selected (El País, ABC, El Mundo, La Razón and La Vanguardia). Furthermore, these five newspapers 'outline a spectrum that goes from El País to ABC, spanning practically all the ideological opinions with political representation in our country' (López García 2004:15); ii) Regarding radio media (RNE, Ser, Cope, Onda Cero and esradio) and TV media (TVE, 24h, Antena 3, La Sexta, Telecinco and Cuatro) all the 'non-paying' general information media outlets were selected, in addition to the non-paying themed political opinion media such as '24h', except for the COPE group's TV channel '13TV', which was discarded because its audience data could not be compared as it did not participate in the audiences report of the Spanish communications media offered by *Kantar Media*.

---

3. Delimiting the theme: i) The press articles were analysed and codified based on their printed version as this was a more reliable way of deciding which of them fit into the genre of political opinion due to their formal structure and content. Thus, all the opinion articles from the different sections of each newspaper were selected, excluding the editorials (because following Marques de Melo (1985), even when formally directed at public opinion they 'conceal a relationship of dialogue with the state'). ii) The radio and TV programmes with sections of political debates were codified based on the web portal of each programme and from the respective 'a la carte' audiovisual publications libraries after analysing the entire debate for each programme in the set broadcast during the delimited time period.

In line with these delimitations, a database was compiled that included the set of political opinion articles from the five daily newspapers and the set of radio and TV political debates broadcast by the media outlets included in the study. *Table 4* shows that a total of 376 political debate spaces from the sample group of radio and TV programmes were codified along with the 655 political opinion articles selected from the press headlines.

Table 4. Media groups, the media and the number of pieces analysed

MEDIA GROUPS	PROPERTY OF THE MEDIA	TELEVISIONS				RADIOS				NEWSPAPERS
		TVE			24h	RNE				
RTVE	*TVE, 24H, RNE*: Ministry of the Presidency and for Territorial Administrations, Government of Spain.	Los Desayunos de TVE	La mañana	El debate de la 1	La noche en 24h	Las mañana de RNE	24h			
		13	18	2*	12	19	16			
PRISA	*SER*: 100% Prisa Radio. *El País*: 100% Prisa Noticias.					SER				EL PAÍS
						Hoy por hoy	Hora 25			
						21	19			66
VOCENTO	*ABC*: 100% Comeresa Prensa.									ABC
										149
UNIDAD EDITORIAL	*El Mundo*: 100% Unidad Editorial, Información General.									El Mundo
										153
COPE	*COPE*: 43% Radio Popular + participation of Spanish Episcopal Conference (52%) and La Información (5%).					COPE				
						Herrera en COPE	La Linterna			
						18	17			
ATERSMEDIA	*Antena 3 y La Sexta*: 100% Atresmedia. Onda Cero: Uniprex and 100% Atresmedia.	Antena 3	La Sexta			ONDA CERO				
		Espejo Público	Al rojo vivo	La Sexta noche	Más vale tarde	Más de uno	Julia en la Onda	La Brújula		
		20	20	4*	20	18	18	17		
PLANETA CORPORACIÓN	*La Razón*: 28% Audiovisual Española 2000 + participation of Planeta Corporación (57%) and Antena 3 Noticias (15%).									La Razón
										149
GRUPO GODÓ	*La Vanguardia*: La Vanguardia Ediciones, 100% participation of Gupo Godó de Comunicación.									La Vanguardia
										138
MEDIASET ESPAÑA	*Telecinco* and *Cuatro*: 100% Mediaset España Comunicación.	Telecinco	Cuatro							
		El Programa de Ana Rosa	Las Mañanas de Cuatro	Un tiempo nuevo						
		18	19	2**						
LIBERTAD DIGITAL	*esradio*: 100% Libertad Digital.					esradio				
						Es la mañana	Es la tarde de Dieter	En Casa de Herrero	Sin Complejos	
						20	18	18	9***	

* Weekly program.
** Weekly program canceled in the second half of observation.
*** Weekly program (weekend).

Source: Compiled by the author

The parameters set for constructing the database were: date the piece was broadcast/published, the media, the total number of debate participants (except for opinion articles, where only the writer was recorded), the gender of the participants and the identification of the content dealt with in the piece based on key words and up to a maximum of 6 issues per piece. The debates and opinion articles were codified manually

with a codifier, taking the set of issues covered in each piece into consideration. The need to know the exact content of each debate or article from a global perspective meant that other methods such as text mining had to be ruled out because while in some cases a content could be associated with a certain key word or words easy to detect with this method (e.g. terrorism), in others this was not possible (e.g, constitution, which depending on the context could refer to compliance with it - within the framework of Catalan independence or its reform) Within the same context of the 2015 Spanish general election, and taking the study on the press content that articulated the political agenda in this period (Blasco-Duatis, 2017) as a benchmark, a total of 350 issues associated with the set of pieces analysed were identified (press, radio and television) and codified from 1 to 6 according to the number of issues they covered. The 350 issues were then grouped by conceptual similarity into 34 broad categories, from which 18 with sufficient weight were selected, from now on referred to as the top18: (1) pacts (the politics of pacts between parties, dialogue, understanding, forming a government, the great coalition pact PP-PSOE, in favour of a national pact PP-PSO-C's, pact C's-PSOE, governing from the centre, from the presidency of Congress, and so on; (2) Catalan independence (against nationalism/separatism, sovereignty of the Spanish nation, in favour of Spanish unity, conservatism and against the right to decide in Catalonia, Catalan cultural policy, difficulties in forming an autonomous government in Catalonia, in favour of an agreed, legal referendum in Catalonia, and so on; (3) gender inequality and domestic violence (on sexist comments from certain politicians, proposals for the law on domestic violence, labour conciliation, sexual abuse, violence against women, and so on; (4) terrorism (the Syrian war, jihadism, DAESH, ISIS, ETA, and so on); (5) corruption (tax amnesty, under indictment, tax fraud, parliamentary immunity, IMF Lagarde case, and so on); (6) politainment (candidates' participation in talk shows, political discussions or entertainment shows); (7) economy/crisis (the global economy, the Spanish economy, austerity, cutbacks, economic recovery, bailout, at risk of poverty, campaign promises about Personal Income Tax and taxes, and so on); (8) institutional stalemate(ingovernability, post-electoral state, blockage in forming a government, failure to reach an agreement); (9) education (reform of the Law on Education, Vocational Training, grant system, academia and science, and so on); (10) regeneration/change (old politics, new parties, end of the two-party system, the traditional parties, resistance to change, fragmentation of parties and votes, and so on); (11) constitutional reform (national transition, territorial reform of the privileges of the Spanish regions, and so on); (12) statistics and CIS (publishing statistics, CIS, evolution of the vote during campaigns, electoral law, election exit polls, and so on); (13) voting/electoral process (campaign launch, floating vote, anarchy and not voting in elections, tactical voting, postal voting, reflection forum, electoral commission, and so on); (14) debates (following electoral debates on TV); (15) international politics (Spanish–European relations, European politics, refugees, international politics, and so on); (16) the environment (climate change, the environment, Paris Congress, and so on); (17) PSOE crisis (PSOE leadership crisis, internal dispute between socialist barons, and so on); (18) assault on Rajoy (youth assaulting President Rajoy during a campaign rally).

6. Results

The results derived from applying the CoDa method to the data obtained from the content analysis are shown below. Essentially, what we show is the representation of the AS theory for the 2015 electoral period and the agendas of the main Spanish media groups. Following the framework set out in *Table 4*, the set of radio/TV programmes with political debate spaces and the opinion articles on politics featured in the newspapers were incorporated into their appropriate media group structures with the aim of visualising the AS of the set of media groups under study.

In *Figure 1* the AS theory for the whole period is represented, based on the form biplot made up of the top18 issues and their senders (media groups) under the premise that the interest lies in the relative/comparative volume of the contents and not in the absolute volume which, as discussed earlier, the usual statistical methods do not allow for. A first formal reading highlights the fact that the degree of representation of the variables (issues) in the analysis in principal components is highly reliable, given that the first two components together explain 75% of the total variance. On a different note, the closed geometric means of the top18 issues, which in turn define the origin of the coordinates in the biplot, indicate that the most prominent of the top18 issues across the set of media groups are, in this order: *(1) pacts*, *(2) Catalan independence*, *(10) regeneration/change*, *(14) debates*, *(8) institutional stalemate* and *(13) voting/electoral process*.

Figure 1. Form biplot of the AS of the top18 issues during the whole period by media groups and by types of media (radio R, television T, press P)
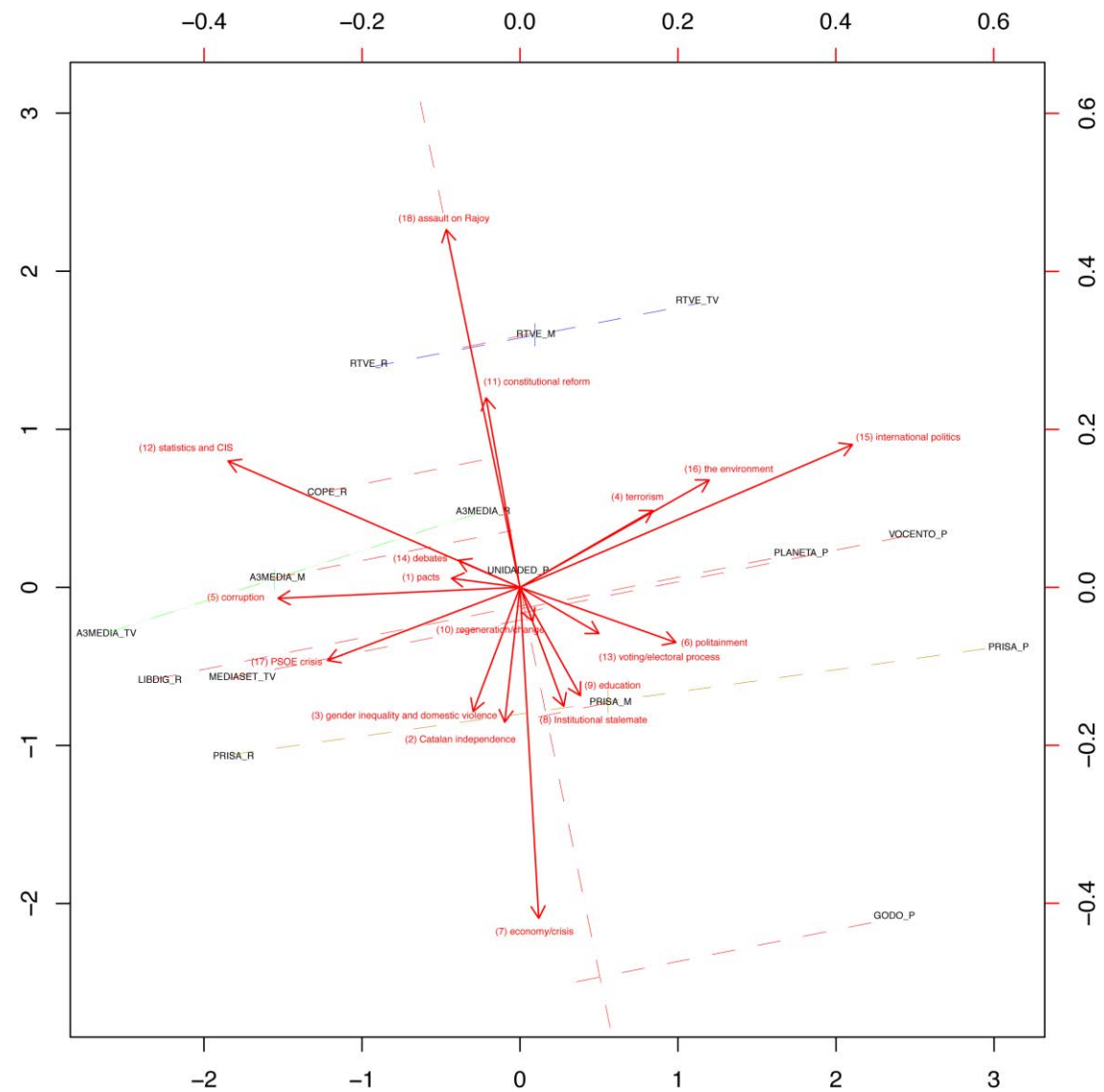
Source: Compiled by the author

Table 5. Closed geometric means of the top18 issues

Top18 issues	Closed geometric means
(1) pacts	0.162
(2) Catalan independence	0.140
(3) gender inequality and domestic violence	0.021
(4) terrorism	0.047
(5) corruption	0.048
(6) *politainment*	0.029
(7) economy/crisis	0.039
(8) Institutional stalemate	0.084
(9) education	0.009
(10) regeneration/change	0.095
(11) constitutional reform	0.024
(12) statistics and CIS	0.031
(13) voting/electoral process	0.082
(14) debates	0.091
(15) international politics	0.026
(16) the environment	0.013
(17) PSOE crisis	0.039
(18) assault on Rajoy	0.020

Source: Compiled by the author

The media who behave similarly with respect to their content composition and, consequently, whose opinion makers focus their attention on similar issues, can be deduced from the biplot in *Figure 1*. A first general reading shows that three of the five press groups (*El País*, *ABC* and *La Razón*) quite obviously have similar content compositions. These compositions, however, are different from those of the TV and radio media (and also from the newspaper *El Mundo*), whose sets of issues are clearly dissimilar from each others'. The case of the newspaper *La Vanguardia* also stands out because while its content axis is closer to those of the other press outlets, its composition of issues is clearly different from those of the media groups as a set.

The information provided by this visualisation method is especially interesting for interpreting the *level of proportionality in establishing each sender's (media group's) issues* in relation to the top18 issues that comprise the representation of the AS. If we take the centre of the diagram as the paradigm of proportionality (i.e., the point that corresponds to the media groups that cover the set of top18 issues in the same proportion as the overall proportion of all the groups) and we look at how far each group is from the centre, we can order the ones that most closely to least closely mirror this proportionality in their coverage of the set of issues analysed. Where the media groups are comprised of different media type(s) –press (P), radio (R) or television (T)– this is represented in the biplots, and the middle point which homgenises the media groups they correspond to is also indicated (as in the cases of RTVE, Atresmedia and Prisa, differentiated by the line that joins the vertexes of the two media groups in each case and their middle point marked with an M). From this perspective, and from a global reading of the media outlets that make up the ten media groups analysed in this study, it can be seen that the group Unidad Editorial is the one whose opinion makers cover the top18 issues most proportionately, followed closely (and in this order) by the groups Prisa, Atresmedia, COPE and RTVE. On a latitude somewhat further from the centre (also in this order) there are Mediaset España, Planeta, Libertad Digital and Vocento. And last, the group Godó stands out as the media group that covers the top18 issues least proportionately; in other words, certain issues among the set that make up the media agenda in that period occupy more opinion spaces in their agenda than others. Thus, the relative positions of each media group in relation to the centre indicates that from Unidad Editorial to Grupo Godó there is a scale of inequality in their coverage of the issues

set in the agenda. In other words, this scale corresponds to a media group talking 'a little about a lot of issues' (most obviously the group Unidad Editorial) or 'a lot about few issues' (which is clearly the case with the Godó group). Also of note is the fact that the state-owned media group RTVE is considerably distant from the centre of proportionality, with its axis clearly located on the theme line (18) *assault on Rajoy* and (11) *constitutional reform*. This difference is surprising more evident in *Figure 2* and for the case of the RTVE TV group (bearing in mind that it is a state-owned media group), which is shown to be the media outlet located furthest from this proportionality of issues that make up the agenda.

The representation of the biplot of the compositional coverage of the data takes on another level of significance in the transition from being a static mapping model of AS to a dynamic conception. A practice widely used among academics interested in the AS theory consisting of comparing the agendas of the same sender in two different periods must be developed to shape this dynamic representation. Following this structure, a dynamic scenario to study the agenda is thus shaped which, in the context of compositional analysis and its representation with biplots, is especially interesting (in relative terms) to visualise the dynamics of the presence/absence or omission/signification of issues in the agenda. In other words, this representation visualises the phenomenon of the spiral of silence because the dynamics established by the thematic hierarchization process and AS result in the signification of certain issues to the detriment of others, which are relegated or ommited.

Figure 2 illustrates how in the transition phase between the fist period (the electoral campaign identified by a 1) and the second phase (post-electoral period identified by a 2) a first level of the spiral of silence is constructed, because an agenda characterised by 10 issues in the first period (represented on the biplot by a semicircle that goes from issue (4) *terrorism* to issue (12) *statistics and CIS*) transforms into an agenda reduced to basically six issues in the second period: (2) *Catalan independence*, (1) *pacts*, (9) *education*, (11) *constitutional reform*, (17) *PSOE crisis* and (8) *Institutional stalemate.* The last two issues particularly stand out from the rest in this second period. It is important to contextualise that in the first period the focus is on seeking electoral support (electoral campaign) and the issues are at the service of the confrontation between the electoral programmes of opinion makers; whereas in the second period (post-electoral period), it is enlisting ideology and the search for common ground among candidates that dictates what issues are now preeminent. The fact that the biplot compares the relative importance of the issues (in our case between media groups and moments in time) must be taken into consideration. Thus, the global importance or lack of importance of an issue is better illustrated by Table 5. Furthermore, the group of issues discarded due to their small volume when the top18 were determined must be considered, as must (following Neumann's fundamentals) the issues that the opinion makers did not focus any attention on and so did not feature in the thematic agendas of the media groups.

Figure 2. Form biplot of the AS of the top18 by two-week period (1=first two-week period and 2=second two-week period) by media groups and by type of media (radio R, television T, press P)
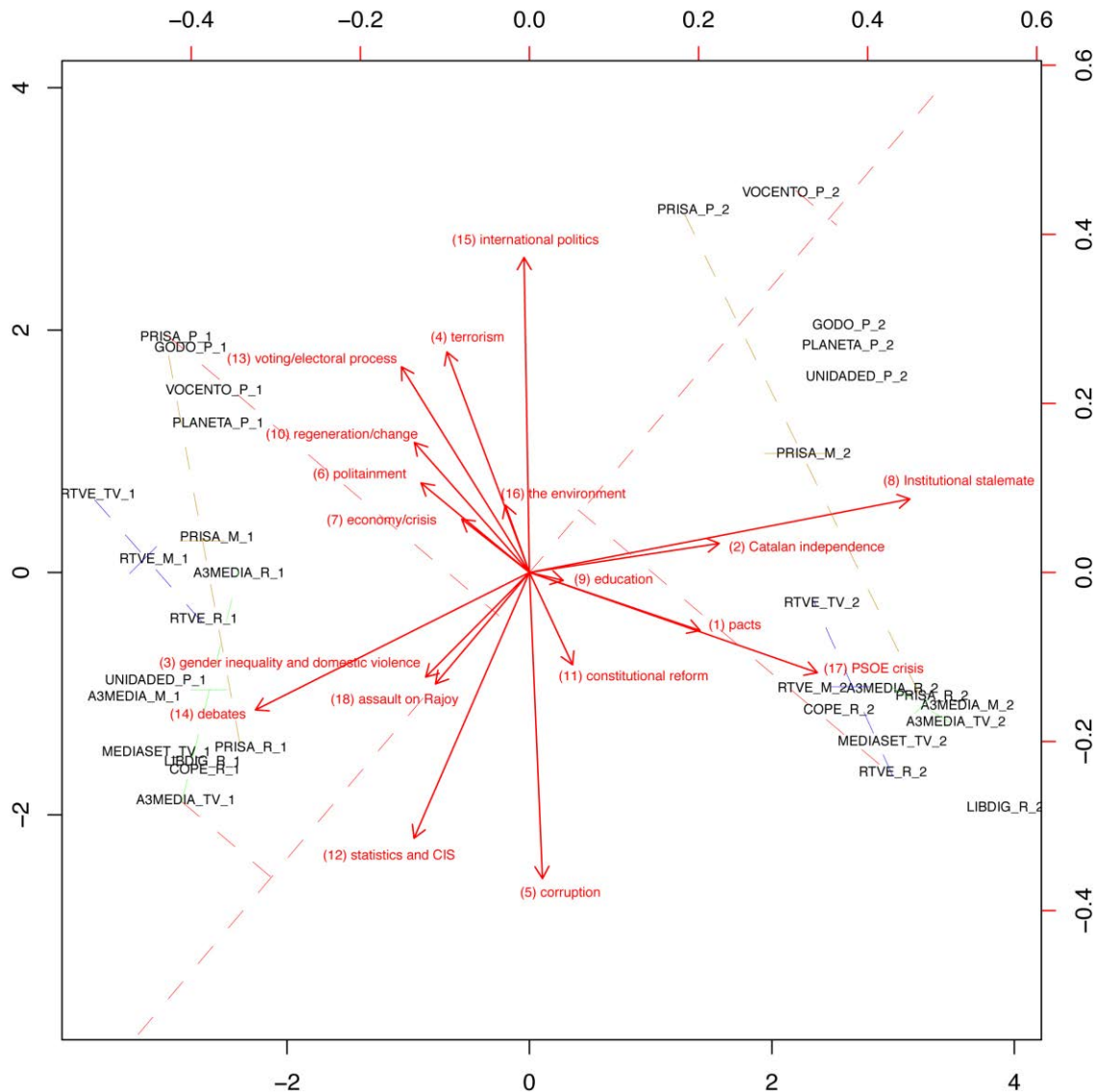
Source: Compiled by the author

Again in *Figure 2*, focusing on the study of the issues that make up the AS and their relationships with the senders (media groups), the content pairings which are nearly parallel are –*(2) Catalan independence and (8) Institutional stalemate, (1) pacts and (17) PSOE crisis, (3) gender inequality and domestic violence and (18) assault on Rajoy, (6) politainment and (7) economy/crisis*– tend to maintain a proportional relationship, i.e., if one of the media groups broadcasts relatively more about *(2) Catalan independence* than any other media group, they also tend to broadcast more about (8) *Institutional stalemate* Contrarily, and we will use it as an example, the contents (15) *politainment* and (5) *corruption,* whose extreme points are far from each other, have a mutual ratio that differs substantially among the media groups. In short, the relationships that are established among issues and senders in terms of proportionality outline a particular scenario for each media group of the issues that their opinion makers address in varying degrees. Furthermore, the similarities and differences in the prioritization of the issues in the agendas proposed by these same opinion makers in the different media groups is also reflected.

Continuing with the study of ratios among issues and senders in the form biplot in *Figure 1*, if we project the media groups orthogonally in the direction of the content (18) *assault on Rajoy* (letting them fall at an angle of 90 degrees to the direction defined by the vector-issue, as represented by the broken line), we see that the media outlet that covers this content most is clearly the RTVE group, followed closely be the COPE group and Atresmedia. Some way behind we find the groups Unidad Editorial, Libertad Digital, Mediaset España, Planeta, Vocento and Prisa, and last the Godó group, whose opinion makers address this issue least and so gives it least media media coverage. Furthermore, if we take the same vector-issue case in *Figure 2* (data dispersed by campaign period and post-electoral period), substantial differences appear between the two periods: while in the global study of the AS in Figure 1 the group that covered this issue most was RTVE and the one that covered it least was Godó, what we see in *Figure 2* is that in the campaign period it is the Atresmedia opinion makers who cover this issue most and the Prisa group opinion makers who cover it least, while in the the post-campaign period, it is RTVE who addresses this issue most and the Vocente group least. Thus, it is imperative not to take just one global reading of the moment for each issue/media group. A general overview must be accompanied by a specific, detailed look at moments and issues/media groups to enrich the debate.

Regarding the example of the orthogonal projection in *Figure 2*, and for the press media groups, what must be pointed out is while in the first period the issues that make up the AS form a semi-circle that goes from (4) *terrorism* to (7) *economy/crisis*, in the second post-electoral period this semicircle of issues breaks up substantially and the issues-vectors appear opposite each other. This relative dissociation of the absence/presence in the dynamic reading arising between the first and the second periods of analysis of the AS, provides us with the possibility to complement the point brought up previously about the dynamics of ommission/signification of the issues in the AS and, in short, to visualise the phenomenon of the spiral of silence.

Especially interesting in this period are the relationships that are established among the senders and the contents, because each media group's relative position is closely described by the distribution of the contents in the same biplot. Thus, the orthogonal projections derived from each content and for each media group mentioned above describe to us both the issues that are most associated with each media group and the content that least defines the composition of issues in their agendas. Essentially, what derives from this reading of the biplot visualisation of the compositional analysis of the data could be considered as the representation of the priming effect for each media group and set of contents of the AS. If we understand that each vector-issue is represented with different emphasis by the various media outlets (in other words, they describe the benchmarks of priming) we can identify, and more importantly map, that not only do certain issues recur in a global sense (*Table 5*), but they are also associated with a certain media group among other associations, but in the sense of their relative absence. Thus, taking the RTVE group in *Figure 1* as the example, the benchmarks that define the salient issues for the opinion makers of this group are essentially (18) *assault on Rajoy* and (11) *constitutional reform*. This relationship, which can be studied in detail for each media group, explains the relationship between the issues most addressed in the AS for each sender, developing a process of prioritisation of the salient issues for their public typical of the genesis of the priming effect.

Thus, from the information provided by *Figure 2*, what is required is a global reading of the distribution of the media groups in the coordinate space according to the type of media. If we divide the space into four parts, using the axes of the coordinates with their extremes on the respective points (0, 0.0), we can see that the press groups are concentrated in the upper right-hand and left-hand quadrants, while TV and radio media groups occupy the spaces in the lower quadrants. What is important to point out here is that beyond the typical

differences among the issues that make up the AS for each media group, there is a second ordering that is described by the type of media groups. The groups identified as press media (Prisa, Vocento, Godó, Planeta and Unidad Editorial) share a semantic field typical of the issues of the AS that is different from the groups that are exclusively radio/TV media (RTVE, Mediaset España, Atresmedia, COPE and Libertad Digital), whose opinion makers address the issues they focus on proportionately differently.

Continuing with the study of the issues that make up the AS in *Figure 2*, the substantial concentration of issues-vectors in the first part of the analysis (electoral campaign space) compared with in the second period (post-electoral space) must be pointed out. If we consider that the issues (5) *corruption* and (15) *politainment* have similar ratios in the two parts of the period analysed – in other words, opinion makers have addressed these issues in both periods - what stands out is that the AS in the electoral campaign period covers a space of ten issues with larger ratios, in contrast to the six issues addressed in the post-electoral phase. What is especially significant in this post-electoral space is how all the TV and radio media groups appear united on the issues (17) *PSOE crisis* and (1) *pacts*.

Last, it is essential for the study to identify the differences in the AS of the various media in the same group. To do so, as pointed out at the beginning, the compositional study of the groups must be broken down by type of media (press, radio, TV). Figure 2 shows that there are substantial differences among the different types of media within the groups RTVE, Prisa and Atresmedia (between radio and TV in the case of RTVE and Atresmedia, and between the press and radio in the case of the Prisa group). Furthermore, and once again comparing the electoral campaign space and the post-electoral space, we can see that in the case of Prisa the distance between the types of media increases and so the differences in the AS of the opinion makers likewise increase. In the case of RTVE, the distance between the types of media remains similar in the two periods, and in the case of Atresmedia what happens is the opposite to Prisa, their distances reducing in the AS in the post-electoral space.

7. Discussion and conclusions

The compositional study of the AS of the main media groups in Spain has allowed us to represent their agendas in an intuitive way, helping to focus the analysis on the relative importance of each type of content. Thus, we have been able to visualise which media types or groups emphasise which contents, which senders or contents are similar to each other and which are not, which issues in the agenda are correlated similarly or differently by the senders (priming) and which contents are subject to an ommission/prioritisation process (spiral of silence). We have also been able to represent the similarities and differences among media groups and their associated thematic universes.

Regarding the case study on the media groups, some contributions must be specifically highlighted. This study has demonstrated the need to observe each type of media that forms part of a group independently, visualising not only the position of the media groups in the coordinate space but also the position of each type of media in the context analysed as represented in the individualised study. This analysis of the parts also foments the possibility of comparing the media of different groups according to their type (press, radio or television), thus contributing to an exercise of primary analysis between equals which later, in a second level of study, complements the definition of each media group in the observed universe. Furthermore, the representation of the AS by means of biplots enables us to compare the public and private media groups, determining the position of each one in relation to the set of the media systems analysed.

The contributions in the dynamic phase of the compared time periods must also be highlighted as they help to identify the contents and volume that characterise the agenda of

the opinion makers for each time period. In this sense, the study has demonstrated the compositional capacity for visualising and studying the groups of issues which, associated among each other, signify a priming effect. Furthermore, the research has also represented the spiral of silence in a study, which visualises the presence/absence of the issues in the agendas as they evolve in each study period.

Last, regarding the CoDa biplot, it must be pointed out that this method is also highly recommended for data collection methods based on text mining and for visualising content analysis processes in communication sciences, especially those derived from studies on the media. In this sense, an oft-mentioned limitation of CoDa must be mentioned: it is not a suitable method for sparse data tables. As stated previously, zero replacement methods (Martín-Fernández et al., 2015b) when their number is reduced do exist. Nonetheless, as Blasco-Duatis et al. (2018) state, this limitation can be minimised by developing AS studies with a larger volume of data and by applying a two-stage issue codification/categorisation process that allows various sub-issues (codes) to be included within a similar broader issue (category), known as amalgamation in CoDa terminology.

References

Aitchison, J. (1982). The statistical analysis of compositional data. *Journal of the Royal Statistical Society. Series B (Methodological)* 44(2), 139–177.

Aitchison, J. (1983). Principal component analysis of compositional data. *Biometrika* 70(1), 57–65.

Aitchison, J. (1986). *The Statistical Analysis of Compositional Data. Monographs on Statistics and Applied Probability*. London: Chapman and Hall.

Aitchison, J., Barceló-Vidal, C., Martín-Fernández, J.A. & Pawlowsky-Glahn, V. (2000). Logratio analysis and compositional distances. *Mathematical Geology* 32(3), 271-275.

Aitchison, J. & Greenacre, M. (2002). Biplots of compositional data. *Journal of the Royal Statistical Society: Series C (Applied Statistics)* 51(4), 375-392.

Almirón, N. (2007). La convergencia de intereses entre banca y grupos de comunicación: el caso de SCH y PRISA. *Zer* 22, 41-67.

Batista-Foguet, J.M., Ferrer-Rosell, B., Serlavós, R., Coenders, G. & Boyatzis, R.E. (2015). An alternative approach to analyze ipsative data. Revisiting Experiential Learning Theory. *Frontiers in Psychology* 6, 1742.

Berelson, B. (1952). *Content analysis in communication research.* New York: Hafner.

Besova, A.A. & Cooley, S.C. (2009). Foreign News and Public Opinion: Attribute Agenda-Setting Theory Revisited. Ecquid Novi: *African Journalism Studies* 30(2), 219-242, DOI: 10.1080/02560054.2009.9653403.

Blasco-Duatis, M., García Fernández, N. & Cunha, I. (2017). Political opinion in the Spanish newspapers. Analysis of the period General Elections campaign in Spain, 2015. *Revista Latina de Comunicación Social* 72, 349-373.

Blasco-Duatis, M., Coenders, G. & Saez, M. (2018). Compositional visualization of intermedia agenda setting by the main media groups and political parties in the Spanish 2015 General Elections. *Revista Latina de Comunicación Social* 73, 264-292.

Blumler, J.G. & Gurevitch, M. (1995). *The Crisis of Public Communication.* London: Routledge.

Blumler, J. & Kavanagh, D. (1999). The third age of political communication: Influences and features. *Political Communication* 16, 209–230.

Buccianti, A., Mateu-Figueras, G. & Pawlowsky-Glahn, V. (2006). *Compositional Data Analysis in the Geosciences: From Theory to Practice*. London: Geological Society.

Cohen, B. (1963). *The press and foreign policy*. New York: Princenton University Press.

Conway, B. A., Kenski, K. & Wang, D. (2015). The rise of Twitter in the political campaign: Searching for intermedia agenda-setting effects in the presidential primary. *Journal of Computer-Mediated Communication* 20(4), 363-380.

Cui, D. & Wu, F. (2017). Inter-media agenda setting in global news production: examining agenda attributes in newspaper coverage of the MH370 incident in the U.S., China, and Hong Kong. *Asian Journal of Communication*, DOI: 10.1080/01292986.2017.1305426

Dearing, J. & Rogers, E. (1996). *Agenda Setting*. Thousand Oak: Sage Publications.

Egozcue, J.J. Pawlowsky-Glahn, V., Mateu-Figueras, G. & Barceló-Vidal, C. (2003). Isometric logratio transformations for compositional data analysis. *Mathematical Geology* 35(3), 279-300.

Egozcue, J.J. & Pawlowsky-Glahn, V. (2011). Basic concepts and procedures. In V. Pawlowsky-Glahn & A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications* (pp. 13-28). New York: Wiley.

Eijnatten, F.M., van der Ark, L.A. & Holloway, S.S. (2015). Ipsative measurement and the analysis of organizational values: an alternative approach for data analysis. *Quality & Quantity* 49(2), 559-579.

Ferrer-Rosell, B. & Coenders, G. (2016). Destinations and crisis. Profiling tourists' budget share from 2006 to 2012. *Journal of Destination Marketing & Management*. DOI: 10.1016/j.jdmm.2016.07.002

Frederick, E.L., Burch, L.M. & Blaszka, M. (2015). A shift in set: examining the presence of agenda setting on twitter during the 2012 London Olympics. *Communication & Sport* 3(3), 312-333.

Fry, T. (2011). Applications in economics. In V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications* (pp. 318-326). New York: Wiley.

Gabriel, K.R. (1971). The biplot-graphic display of matrices with application to principal component analysis. *Biometrika* 58(3), 453-467.

Golan, G. (2006). Inter-media agenda setting and global news coverage. Assessing the influence of the New York Times on three network television evening news programs. *Journalism Studies* 7(2), 323-333.

Greenacre, M. (2011). Compositional data and correspondence analysis. In V. Pawlowsky-Glahn & A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications* (pp. 104-113). New York: Wiley.

Guo, L., Chen, Y.K., Vu, H., Wang, Q., Aksamit, R., Guzek, D., Jachimowski, M. & McCombs, M. (2015). Coverage of the Iraq War in the United States, Mainland China, Taiwan and Poland. *Journalism Studies* 16(3), 343-362, DOI: 10.1080/1461670X.2014.885198

Hallin, D. & Mancini, P. (2004). *Comparing Media Systems: Three Models of Media and Politics*. Cambridge: Cambridge University Press.

Hamelink, C. (1984). *Finanzas e información. Un estudio de intereses convergentes*. México: Instituto Latinoamericano de Estudios Transnacionales, Nueva Imagen.

Iyengar, S. & Kinder, D. (1987). *News That Matters*. Chicago: University of Chicago Press.

Jungherr, A., Schoen, H. & Jürgens, P. (2016). The mediation of politics through Twitter: An analysis of messages posted during the campaign for the German federal election 2013. *Journal of Computer-Mediated Communication* 21(1), 50-68.

Kogovšek, T., Coenders, G. & Hlebec, V. (2013). Predictors and outcomes of social network compositions. A compositional structural equation modeling approach. *Social Networks* 35(1), 1-10.

Krippendorff, K. (1990). *Metodología de análisis de contenido: teoría y práctica*. Barcelona: Paidós.

Lang, G. & Lang, K. E. (1966). The Mass Media and Voting, In B. Berelson & M. Janowitz (Eds.), *Reader in Public Opinion and Communication* (pp. 455-472). New York: Free Press.

Lim, J. (2011). First-level and second-level intermedia agenda-setting among major news websites. *Asian Journal of Communication* 21(2), 167-185, DOI: 10.1080/01292986.2010.539300

Luo, Y. (2014). The Internet and agenda setting in China: The influence of online public opinion on media coverage and government policy. *International Journal of Communication* 8, 1289–1312.

López García, G. (2004). *Comunicación electoral y formación de la opinión pública: las elecciones generales de 2000 en la prensa española.* Valencia: Servei de Publicacions de la Universitat de Valencia.

Lippmann, W. (1922). *Public Opinion.* New York: Macmillan.

Luhmann, N. (1973). *Ilustración sociológica y otros ensayos.* Buenos Aires: Editorial Sur.

Luo, Y. (2014). The Internet and agenda setting in China: The influence of online public opinion on media coverage and government policy. *International Journal of Communication* 8, 1289–1312.

Marcinkowski, F. (2014). Mediatization of politics: Reflections on the state of the concept. *Javnost* 21(2), 5–22.

Marletti, C. (1982). L'informazione tematizzata. Nuove tecnologie della comunicazione e trasformazione dei modelli giornalistici, In F. Barbano (Ed.), *Nuove tecnologie: sociologia e informazione cuotidiana* (pp. 163-225). Milan: Angeli.

Marques De Melo, J. (1985). *A opinão no jornalismo brasileiro.* Petrópolis: Vozes.

Martín-Fernández, J.A. Barceló-Vidal, C. & Pawlowsky-Glahn, V. (2003). Dealing with zeros and missing values in compositional data sets using non-parametric imputation. *Mathematical Geology* 35(3), 253–278.

Martín-Fernández, J.A., Palarea-Albaladejo, J. & Olea, R.A. (2011). Dealing with zeros. In V. Pawlowsky-Glahn & A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications* (pp. 47-62). New York: Wiley.

Martín-Fernández, J. A., Daunis-i-Estadella, J. & Mateu-Figueras, G. (2015a). On the interpretation of differences between groups for compositional data. *SORT-Statistics and Operations Research Transactions* 39(2), 231-252.

Martín-Fernández, J.A., Hron, K., Templ, M., Filzmoser, P. & Palarea-Albaladejo, J. (2015b). Bayesian-multiplicative treatment of count zeros in compositional data sets. *Statistical Modelling* 15(2), 134-158.

Mazzoleni, G. & Schulz, W. (1999). Mediatization of politics: A challenge for democracy? *Political Communication* 16(3), 247–261.

McCombs, M. & Shaw, D. L. (1972). The agenda-setting function of mass media. *Public Opinion Quarterly* 36(2), 176–187.

McCombs, M. (2006). *Estableciendo la agenda.* Barcelona: Paidós Comunicación.

Meraz, S. (2009). Is There an Elite Hold? Traditional Media to Social Media Agenda Setting Influence in Blog Networks. *Journal of Computer Mediated Communication* 14, 682–707.

Min, Y. (2004). Campaign agenda formation: The news media in the Korean congressional election of 2000. *Asian Journal of Communication* 14(2), 192-204, DOI:10.1080/0129298042000256767.

Naudé, A.M.E. & Froneman, J.D. (2003). Trends in news agenda setting by the Sunday Times and Rapport in 2000. Ecquid Novi: *African Journalism Studies* 24(1), 84-98, DOI: 10.1080/02560054.2003.9653262.

Noelle-Neumann, E. (2003). *La espiral del silencio. Opinión pública: nuestra piel social.* Barcelona: Paidós Comunicación.

Palarea-Albaladejo, J. & Martín-Fernández, J.A. (2015). zCompositions—R package for multivariate imputation of left-censored data under a compositional approach. *Chemometrics and Intelligent Laboratory Systems* 143, 85-96.

Blasco-Duatis, M.; Saez, M. & Fernández García, N.

Compositional representation (CoDa) of the Agenda-setting of the political opinion makers in the main Spanish media groups in the 2015 general election

Pawlowsky-Glahn, V. & Buccianti, A. (2011). *Compositional Data Analysis. Theory and Applications.* New York: Wiley.

Pawlowsky-Glahn, V., Egozcue, J.J. & Tolosana-Delgado, R. (2015). *Modeling and Analysis of Compositional Data.* Chichester: Wiley.

Pierotti, M.E.R., Martín-Fernández, J.A. & Seehausen, O. (2009). Mapping individual variation in male mating preference space: multiple choice in a colour polymorphic cichlid fish. *Evolution* 63(9), 2372-2388.

Plihon, D. & Ponssard, J.P. (2001). *Montée en puissance des fonds d'investissement. Quels enjeux pour les entreprises?* París: La Documentation française.

Ragas, M.W. & Kiousis, S. (2010). Intermedia agenda-setting and political activism: MoveOn.org and the 2008 presidential election. *Mass Communication and Society* 13(5), 560-583, DOI: 10.1080/15205436.2010.515372.

Revuelta, G. (2006). Salud y medios de comunicación en España. *Gaceta Sanitaria* 20, 203-208.

Rogstad, I. (2016). Is Twitter just rehashing? Intermedia agenda setting between Twitter and mainstream media. *Journal of Information Technology & Politics* 13(2), 142-158, DOI: 10.1080/19331681.2016.1160263.

Rubio-García, R. (2014). Twitter y la teoría de la Agenda-Setting: mensajes de la opinión pública digital/Twitter and the Agenda-Setting theory: messages from the digital public opinion. *Estudios Sobre el Mensaje Periodístico* 20(1), 249-265.

Sádaba, T. (2008). *Framing: el encuadre de las noticias. El binomio terrorismo-medios.* Buenos Aires: La Crujía Ediciones.

Santamaría, J.V.G (Cord.) (2012). *Los procesos de "financiarización" en los grupos de comunicación españoles y el caso Prisa-Liberty.* La Laguna: Cuadernos Artesanos de Latina 23.

Serrano, P. (2010). *Traficantes de información. La historia oculta de los grupos de comunicación españoles.* Madrid: Akal.

Shaw, D. L. & McCombs, M. F. (Eds.) (1977). *The emergence of American political issues. The agenda setting function of the press.* St. Paul (MN): West Publishing Company.

Strömbäck, J. (2008). Four phases of mediatization: An analysis of the mediatization of politics. *The International Journal of Press/Politics* 13(3), 228–246.

Sweetser, K.D., Golan, G.J. & Wanta, W. (2008). Intermedia Agenda Setting in Television, Advertising, and Blogs During the 2004 Election. *Mass Communication and Society* 11(2), 197-216, DOI: 10.1080/15205430701590267.

Tedesco, J.C. (2005) Issue and Strategy Agenda Setting in the 2004 Presidential Election: exploring the candidate–journalist relationship. *Journalism Studies* 6(2), 187-201, DOI: 10.1080/14616700500057270.

Thió-Henestrosa, S. & Martín-Fernández, J.A. (2005). Dealing with compositional data: The freeware CoDaPack. *Mathematical Geology* 37(7), 773-793.

Trilling, D. (2014). Two Different Debates? Investigating the Relationship Between a Political Debate on TV and Simultaneous Comments on Twitter. *Social Science Computer Review*, 1-18, DOI: 10.1177/0894439314537886.

Tversky, A. & Kahneman, D. (1973). Availability. Heuristic for judging frequency and probability. *Cognitive Psychology* 5, 207–232.

Valera Ordaz, L. (2014). La influencia de los partidos políticos españoles en las agendas de medios y blogs durante la campaña electoral de 2011. *Communication & Society* 28(3), 115-135.

Van den Boogaart, K. G. & Tolosana-Delgado, R. (2013). *Analyzing Compositional Data with R.* Berlin: Springer.

Vliegenthart, R., Walgrave, S., Baumgartner, F.R., Bevan, S., Beunig, C., Brouard, S., Bonafont, L.C., Grossman, E., Jennings, W., Mortensen, P.B, Palau, A.M., Sciarini, P. &

Tresch, A. (2016). Do the media set the parliamentary agenda? A comparative study in seven countries. *European Journal of Political Research* 55, 283–301. DOI: 10.1111/1475-6765.12134.

Vives-Mestres, M., Martín-Fernández, J.A. & Kenett, R. (2016). Compositional data methods in customer survey analysis. *Quality and Reliability Engineering International* 32(6), 2115–2125.

Weimann-Saks, D., Ariel, Y., Malka, V. & Avidar, R. (2016). Trends in public and media agenda-setting during the 2015 Israeli elections. *Israel Affairs* 22(3-4), 727-742, DOI: 10.1080/13537121.2016.1174386.

Wimmer, R. D. & Dominick, J. R. (2006). *Mass Media Research: an introduction*. USA: Thomson Wadsworth.

Zallo, R. (2011). *Las estructuras de la comunicación y de la cultura*. Barcelona: Gedisa.

4.1.5. Artículo V

Blasco-Duatis, M., Coenders, G., Sáez, M. (2018). Compositional visualization of intermedia agenda setting by the main media groups and political parties in the Spanish 2015 General Elections. *Revista Latina de Comunicación Social*, 73, 264-292. DOI: 10.4185/RLCS-2018-1255-14en

Compositional visualization of intermedia agenda setting by the main media groups and political parties in the Spanish 2015 General Elections [1]

Marc Blasco-Duatis [CV] [ ] [ ]. Doctoral Student. Research Group on Statistics, Econometrics and Health (GRECS), University of Girona, UdG, (Spain) marc.blasco@udg.edu

Germà Coenders Gallart [CV] [ ] [ ]. Full Professor. Research Group on Statistics, Econometrics and Health (GRECS), University of Girona, UdG, CIBER of Epidemiology and Public Health (CIBERESP), (Spain) germa.coenders@udg.edu

Marc Saez [CV] [ ] [ ]. Full Professor. Research Group on Statistics, Econometrics and Health (GRECS), University of Girona, UdG, CIBER of Epidemiology and Public Health (CIBERESP) (Spain), marc.saez@udg.edu

Abstract

This article presents the compositional biplot as an innovative methodological approach to visualise intermedia agenda-setting in the study of media and political agendas in an intuitive way. As an illustration, we use a content analysis of the main Spanish media groups (RTVE, Prisa, Vocento, Unidad Editorial, COPE, Atresmedia, Planeta, Godó, Mediaset España and Libertad Digital) and political parties with a sole constituency (Partido Popular, Partido Socialista Obrero Español, Podemos, Ciudadanos and Izquierda Unida) within the framework of the 2015 Spanish general election period. Unlike traditional approaches, compositional analysis in general and the biplot in particular emphasize the relative salience of the contents within the agenda. The visualisation confirms the methodological soundness of the approach, while also providing a novel perspective of the case under study and visualizing the representation of intermedia agenda-setting.

Keywords

[ES] análisis composicional (CoDa); biplot; comunicación política; grupos de medios; intermedia agenda-setting.
[EN] compositional analysis (CoDa); biplot; political communication; media groups; intermedia agenda-setting.

Contents
1. Introduction. 2. Theoretical framework 2.1. Intermedia *agenda-setting*; brief framework, perspectives and main study models. 2.2. The agenda of the Spanish media groups and the political agenda from Twitter. 3. Traditional approach to analysing content categories in the media. 4. Compositional analysis 4.1. Transformations, association and distance 4.2. Replacement of zeros 4.3. The CoDa biplot 5. Content analysis 6. Results 7. Discussion and conclusions 8. Bibliographical references.

Translated by **Sarah Davies**
(Member of the Chartered
Institute of Linguists, nº44139)

1. Introduction

Since its beginnings, the study of agenda-setting (AS) has mainly been approached from observing content analysis based on the relative or comparative importance of some issues over others. The original precept of the concept itself posits that certain social actors (focusing essentially on the role of the mass media) are postulated as information mediators in a process that includes or omits certain issues depending on the hierarchical importance attributed to them (McCombs, 2007). The differences between senders and content categories derived from the study ae analysed either descriptively, based on the rate of occurrence of the issues, or by means of Spearman correlations, focusing exclusively on rank order.

It is precisely from the essence of the content hierarchization process, in this need to determine the relative importance of the issues by senders, that the aim of this research emerges: to propose a methodological approach based on compositional analysis (CoDa), the standard statistical methodology when the researcher is interested in the relative salience of the parts of a whole (Aitchison, 1986), by means of a compositional tool to visualize data, the biplot. This visualization allows us to see which issues are prioritised, who their senders are and the relations between them, taking the fact that the salient information is the relative volume of each issue for each sender into consideration. The chosen case study in this research is the AS proposed by two social actors, the main Spanish political parties and media groups, during the period of the Spanish general election held on 20th December 2015, with the aim of achieving a compositional representation of intermedia AS.

The paper has an academic structure and pays special attention to the methodological development of compositional tools and category analysis for AS. Following this introduction, there is a theoretical contextualisation of the most important concepts of the AS theory, the media groups in question and the specificities of political communication via Twitter. A framework on category analysis in the media is then presented as a prelude to introducing the methodological tool, the CoDa biplot. The fifth section develops the content analysis on the case study in question and the results are presented in the sixth section. The paper ends with a brief discussion, where the main conclusions are also drawn.

2. Theoretical framework
2.1. Intermedia *agenda-setting*: brief framework, perspectives and main study models

The pioneering publication *Public Opinion* (1922) by Walter Lippmann, who is considered as the intellectual father of agenda-setting (McCombs, 2006: 26), provided a novel perspective on how communication affects the construction of the social reality. In the chapter, 'The world outside and the pictures in our heads,' Lippmann develops the thesis that media outlets define the cognitive map of society from their experience of the world they live in, generating an informative 'pseudo-environment' created by the news that is independent of the factual reality. From this perspective, at the end of the 1960s McCombs and Shaw conducted seminal research on the *function of mass media agenda-setting* (1972) within the framework of the influence that certain media had on the voting decisions of a group of citizens from the town of Chapel Hill (North Carolina) during the 1968 presidential election between the candidates Hubert Humphrey and Richard Nixon. McCombs and Shaw's seminal work became the first research to empirically validate what Lippmann had discerned in the 1920 and it also served to coin the term agenda-setting to refer to the novel theory about the effects of media communication.

Nowadays, the multiplicity of knowledge has exagerated society's vision of what surrounds it. This inability to subject reality to an exhaustive, non-stop process of control has transformed into an essential task for the mass media, who act as the link between citizens' individual experiences and knowledge of the global world. The mass media controls media coverage, including and omitting certain events depending on the degree of importance they attribute to them, thus conditioning citizens' experience of the environment beyond their personal experiences (Fishman, 1983). This process of hierarchisation of the issues considered important to citizens' concerns is designed to focus their attention, thoughts and actions on these issues, thus conferring the first level in public opinion forming wherein people perceive that the events that receive most coverage are necessarily the most important ones (Igartua y Humanes, 2004: 244).

The idea that there is a strong correlation between the emphasis the media places on certain issues and the importance audiences attach to them forms the epistemological basis of the AS theory (Cohen, 1963; McCombs & Shaw, 1972). This function of thematising the news, in other words of including an event in the order of the day for public attention, giving it adequate importance and underlining its central importance and significance (Wolf, 1991), the mass media –irrespective of whether or not the mechanism that determines the construction of the agenda is made manifest– has been posited as as an extremely powerful tool for shaping the dominant mindset in comtemporary societies. Thus, since the beginning AS theorists' interest has been based on demonstrating that the mass media is not only a broadcaster of information, but is also a filter for the issues included in the agenda and as such it defines the attention an issue will command at a particular moment.

Studies of agenda-setting within the phenomenon of mass communication have been approached all over the world from various perspectives. From among this range of models for measuring AS and within the framework of the International Communication Association annual conference held in Acapulco (Mexico) in 1981, McCombs (2006: 71) presented a classification of the different types of relationships between the media coverage of issues and the agendas of different social actors (media, political and public), known as the *Acapulco typology*. This typology is defined by two dichotomous dimensions and is thus describes four perspectives defined by the correlation of: a) the *focus of*

attention, which can encompass the set of issues that define the agenda or can be limited to a single issue on the agenda; and b) the *measurement of public salience* of the items on the agenda, defined by additional measurements that describe a population, as opposed to the measurements that describe individual answers. Consequently, the study of AS is especially relevant in this phase because it defines the concept of *intermedia* AS, in addition to establishing the interrelation of the agendas presented by different social agents (the agendas of the media, the public agenda and/or the political agenda) as the framework of analysis. In the present study, the *focus of attention* is the set of issues on the agenda based on the added *measurement* between the actors the media outlets (media agenda) and political parties (political agenda). Of the four perspectives described in the *Acapulco typology*, this is categorised as type one.

From this taxonomy of the perspectives of the study of intermedia AS, Gonzenbach and McGavin (1997) structured the first methodological approaches. Taking the singularities that have inspired the more than four-hundred studies developed on AS in over forty years of applied research into consideration (McCombs, 2006: 80), the main methodological procedures can be systematized into the following models:

I. Cross-sectional model: This model is based on the study of the relationship between analysis units in a specific, delimited space of time during which an independent variable it selected (e.g., media content) and related to a dependent variable (e.g., the opinion of the audience of this media outlet about the most important topical issues). These are then grouped and ordered according to the importance each actor attributes to them in the measurements and the data is finally correlated by means of the usual Spearman's correlations. The sign of the resulting coefficient defines the grade of correlation between the two actors and consequently between the two agendas (e.g., Conway et al., 2015; McCombs & Shaw, 1972; Ragas & Kiousis, 2010; Weimann-Saks et al., 2016).

II. Longitudinal models: These are comprised of two different study procedures, panel designs and time series, although both models continue using a pre-study correlational phase. The premise of the longitudinal model, in contrast to the cross-sectional model, is the focus on the differences or changes undergone by one or more variables through two or more points in time. The difference between the two procedures described is the unit of analysis used because in the panel design it is generally an individual who is surveyed at different points in time, while in time series the unit of analysis is more often than not an aggregate measurement such as the frequency of certain news items, population percentages about the country's most pressing problem, data about a relevant issue such as unemployment, and so on.(e.g., Cui y Wu, 2017: 11; Lim, 2011: 177; Luo, 2014: 1303; Min, 2004: 200; Sweetser *et al.,* 2008: 208; Tedesco, 2006: 196).

As can be seen, academics of the AS theory have tended to base their research on selecting one or more of the methodological models described, at the service of one of the four research perspectives defined by McCombs's *Acapulco typology*. The comparison of a prior content analysis of the issues covered by two or more social actors (media, political and/or public) within a framework of correlations has generally managed to define the degree of inference of some issues over others and, consequently, to establish a dominant agenda over a relegated one. Notably, the methodological tool presented in this study, the CoDa biplot, serves for both cross-sectional and longitudinal models.

2.2. The agenda of Spanish media groups and the political agenda from Twitter

To visualise the theory of intermedia AS from a compositional methodological approach, two actors have been selected for this study (media agenda and political agenda) in two time periods (the fortnights before and after the 2015 Spanish general election). More precisely, this research analyses the agendas of the main Spanish media groups and political parties with the aim of then bringing together the theme selection derived from each agenda. As will be be seen later in the methodological description, the agendas of the main Spanish media groups (press, radio and television) during the election campaign period were constructed from the political opinion contents of each media outlet's opinion formers [2] and contributors [3]. Thus, each political party's agenda was built by the messages posted on the Twitter social network during this electoral period. This is why it is particularly interesting to briefly include here a framework of the media groups in the Spanish context and to mention how important Twitter is as a tool capable of influencing the public space and, as a consequence, contributing to the development of AS.

Regarding the media groups, the first point to make is that the current Spanish media system is structured on a small number of large media groups, which are exhaustively controlled both in terms of the press and the audiovisual industry. Serrano (2010) identifies four particularly transcendent factors that make up the model: i) a concentration representative of the media world, which is based on a very limited range of large groups that dominate communication and culture; ii) a business logic structured by the processes of *financialization* (massive debt backed by the capital markets) that looks for the homogeneity of these groups in their strategies and ideologial view of the world; iii) a hegemonic composition about the logics of mass social communication stemming from the financial internationalization of the large groups and their associated investment funds; and last, iv) legislation that has looked for ease of application rather than ways to exercise real control.

These precepts especially encourage a trend towards the homogeneity of information and of the formats in which it is presented. The issue selection processes that mean that areas such as health and science do not have specific spaces or independent coverage in the media sphere (Revuelta, 2006) are essentially the same as for other subject groups, such as politics and economics, which manage to monopolise and spread within the multiplicity of media of the system, for example within the structure of the debate format. This homogenisation of the ideological view of the world as one of the main axes of the proliferation of media groups (Serrano, 2010) poses a direct question for communication science academics and, in particular, for those who study the procedures derived from the AS research model.

Thus, the group of Spanish media outlets integrated into the present compositional study on intermedia AS is clearly representative and the aim is to construct the media agenda for the study period in question, dividing the outlets into five types of structures according to their ownership status: RTVE group, the state-owned public corporation; Atresmedia (including Planeta-DeAgostini), Mediaset España, Prisa and Vocento, all publicly traded companies; Godó group, owned exclusively by a single family; COPE group, owned mainly by the Spanish Episcopal Conference; and the groups Unidad Editorial and Libertad Digital which, although they have shareholders in common, work from independent group structures that belong to foreign investment groups. And yet this enormous concentration of media outlets described not only works against informative pluralism, but also in itself generates a clear two-party framework whereby two large media groups (Mediaset España and Atresmedia), majority shareholders in the two benchmark Spanish TV platforms, claim (according to

data provided by Infoadex [4]) not only more than 80% of the income from TV advertising in 2016 and more than 50% of the total audience (according to data from Kantar Media for 2016 [5]) but also, together with Prisa and Mediapro, they exercise overwhelming control of the contents market (series, films, rights to broadcast sports, and so on).

In brief, this contextualisation describes the relationship established over time between the power elites (political, economic, business, etc.) and the media, a link characterized by mutual interdependence in their strategies to attain some specific objectives: the first to ensure favourable media coverage and the second to bring the contents of these elites closer to their audiences (Blumler and Gurevitch, 1995; Blumler and Kavanagh, 1999). More recently, the main research on this subject has challenged these precepts, demonstrating that the power elites in particular in the political arena, are becoming increasingly dependent on the media as a result of *mediatization*. This term refers to the degree of independence between the power elites and the media (Blumler and Kavanagh, 1999; Marcinkowski, 2014; Mazzoleni and Schulz, 1999; Strömbäck, 2008) and it is precisely these correlations that define the impact between the forces that are subject to the projection of the media and, consequently, of society. This leads us to comment on the theoretical fundaments of the AS of the second actor under study here, the political parties, in the digital sphere of the social network Twitter.

Microblogging web platforms like Twitter have reversed influence processes, taking the message not only from traditional means of communication to the public, but also from political parties to citizens, so much so that over the last decade research in the field of the AS theory has focused on studying digital means of communication as new spaces capable of influencing the public space (Bruder, 2008; Krane, 2010; Meraz, 2009; Orihuela, 2011). Twitter currently has 320 million registered users from all over the world and has become one of the social tools of communication most used by the main political leaders. Since Barack Obama's 2008 electoral triumph, which became the paradigmatic scenario of the power of the digital sphere and social networks to construct an electoral conquest based on the direct action of social followers, social media has become an essential tool for developing political life and for electoral campaign processes in particular (Perlmutter, 2008; Towner & Dulio, 2012).

Among the diversity of the media, social networks have emerged as a singular environment due to the way they connect users and facilitate interaction between the political and the public spheres. Twitter in particular has been posited as a new political space to disseminate information to a growing audience (Conway, Kenski and Wang, 2015: 365), becoming a reference tool for compiling information, improving the link with the public (potential voters) and following the actions of sources (Parmelee, 2013). This platform has also emerged as the most popular of the set of social networks to participate in political persuasion with the capacity to draw traffic through all the platforms, as the issues emphasised in tweets are often commented on later on radio and TV talk shows and in the press (Parmelee & Bichard, 2012).

Within this context, Twitter has proved to be a powerful tool to construct a discourse of the characteristics of the new media eco-system, which can be described as extremely brief, very fragmented, disseminated incredibly quickly and having enormous potential to spread exponentially through the dynamics of viral recommendation and diffusion. Incorporating the information supplied by political parties' messages via Twitter into this study is therefore especially pertinent, as the

thematization of the main news items that compile each political parties' argument, and hence their political agenda, can be systematized from this framework.

3. Traditional approach to analysing content categories in the media.

As mentioned above, the very nature of the AS theory means that content analyses generally focus on the relative or comparative importance of some contents over others. It is assumed that some media or social actors are more active than others regarding certain issues, leading to a general study of the relative volume of information about issues to the detriment of the detailed analysis of the content. In most cases, this is evidenced in the formulation of hypotheses and research questions expressed in comparative, relative or competitive terms. Literal examples of research questions that clearly allude to a comparative focus about agenda-setting in different media are plentiful: '*prominent* topics in Twitter messages *compared* to prominent topics in surveys and in television news programs' (Jungherr et al., 2016: 54), 'Is there evidence that the *balance* of mass media to citizen media influence *differs among* independent bloggers of diverse political ideologies based on different types of issues?' (Meraz, 2009: 687), 'Are there similarities between @London2012 and #London2012 in terms of tweet *focus* (i.e., topic)?' (Frederick et al., 2015: 317), 'What are the issues *emphasized* in the online public agenda, the media agenda, and the policy agenda?' (Luo, 2014: 1293), 'The MH370 incident quickly *dominated* the news agenda across many countries' (Cui & Wu, 2017: 2), 'is Twitter *mainly* rehashing mainstream media content?' (Rogstad, 2016: 145), 'The assumption that news media *emphasize and highlight* certain events' (Weimann-Saks *et al.,* 2016: 730), 'The *salience* of issues in MoveOn.org ads will be positively associated with the *salience* of issues in Obama in 30 Seconds ads' (Ragas & Kiousis, 2010: 567), `The issue *salience* of blogs will show a significant positive correlation with issue *salience* of network television news programs' (Sweetser *et al.,* 2008: 204), 'What were the *most important* attributes of the Iraq War in the newspaper coverage of the United States, Mainland China, Taiwan and Poland?' (Guo *et al.,* 2015: 349), 'How did the news agendas of the Sunday Times and Rapport differ on their front pages, with regard to their *lead stories*?' (Naudé & Froneman, 2003: 87), 'What were the *most frequent* policy issues (issue agenda) discussed by the media in regards to each object nation' (Besova & Cooley, 2009: 225). The italics are ours.

The simplest way to assess similarity among senders of political information according to the relative importance of the content categories they send (issues) and to determine which of these categories contribute to their differences, is to compare the frequencies of the top contents (Guo *et al.,* 2015; Jungherr *et al.,* 2016).

Table 1 contains fictional data for six senders (E1 to E6) and their top three content frequencies (C1 to C5). For the sake of simplicity, only the similarity of E1 to all the other senders is assessed. To all intents and purposes, E2 looks identical to E1, even though the way the data are presented in absolute terms makes this difficult to discern at first glance. E3 also seems to be identical to E1. The first two categories in E4 and E5 are the same as in E1, but they differ in the content ranked third, while there is nothing to indicate whether one or the other is more dissimilar from E1. E6 has the same top three issues as E1, albeit with different frequencies. A key question misleading how a table like this is interpreted is that the different senders are compared based on a different set of issues. In other words, we do not know the frequencies of the omitted issues, which may be just marginally below the frequency of the third issue or may have a completely insubstantial frequency.

Table 1: Fictional top3 comparison of the six senders across the content categories C1 to C5 based on absolute frequency

	E1	E2	E3	E4	E5	E6
First	C1-150	C1-50	C1-150	C1-150	C1-150	C1-185
Second	C2-90	C2-30	C2-90	C2-90	C2-90	C3-60
Third	C3-60	C3-20	C3-60	C5-60	C4-60	C2-55

Source: *Compiled by the author*

The upper part of Table 2 is a comparison of the six senders based on the entire set of content categories that appear in the top three lists of at least one sender. In this way, we ensure that mutual comparisons among senders are made on a common basis. For ease of interpretation, the central part of the table contains proportions instead of absolute frequencies. Some authors prefer to use rankings (e.g., Besova and Cooley, 2009; Cui and Wu, 2017; Lim, 2011; Ragas and Kiousis, 2010), as shown in the lower part of the table.

Table 2: Fictional full comparison of the six senders across content categories C1 to C5 based on absolute frequencies (top), relative frequencies (centre) and rankings (bottom)

	E1	E2	E3	E4	E5	E6
C1	150	50	150	150	150	185
C2	90	30	90	90	90	55
C3	60	20	60	50	50	60
C4	45	15	10	10	60	45
C5	15	5	50	60	10	15
C1	0.417	0.417	0.417	0.417	0.417	0.514
C2	0.250	0.250	0.250	0.250	0.250	0.153
C3	0.167	0.167	0.167	0.139	0.139	0.167
C4	0.125	0.125	0.028	0.028	0.167	0.125
C5	0.042	0.042	0.139	0.167	0.028	0.042
C1	1	1	1	1	1	1
C2	2	2	2	2	2	3
C3	3	3	3	4	4	2
C4	4	4	5	5	3	4
C5	5	5	4	3	5	5

Source: *Compiled by the author*

From the second part of *Table 2* it can be deduced that sender 2 is identical to sender 1. On the other hand, sender 3 is markedly different. In comparison to sender 1, sender 3 has a threefold increase in C5 (0.139 / 0.042 = 3.33) and compared to sender 3, sender 1 has a fourfold increase in C4 (0.125 / 0.018 = 4.50).

It also becomes apparent that sender 4 is more different from sender 1 than sender 5. Compared to sender 1, sender 4 has a fourfold increase in C5 (0.167 / 0.042 = 4.00) and compared to sender 4, sender 1 has a fourfold increase in C4 (0.125 / 0.018 = 4.50).

Regarding sender 6, the differences with respect to sender 1 seem sizeable in absolute terms, but not as large in relative terms, because they occur in content categories that have high proportions in both senders (0.514 / 0.417 = 1.23 and 0.250 / 0.153 = 1.64). Thus, if the research questions focus on the relative importance of the contents, then this must be duly taken into consideration when analysing the data.

While the second part of Table 2 could constitute a solid focus of analysis and similar tables are often used (Frederick *et al.,* 2015; Luo, 2014; Min, 2004; Naudé & Froneman, 2003; Rogstad, 2016; Rubio-García, 2014), there is a general lack of concern with how content categories contribute to generating differences among senders, be they relative or absolute.

Such differences (or similarities) are often assessed by means of Spearman's rank correlations among senders based on the lower part of Table 2 (e.g., Conway *et al.,* 2015; Cui and Wu, 2017; Lim, 2011; Luo, 2014; Ragas & Kiousis, 2010; Weimann-Saks *et al.,* 2016) or by means of other types of rank correlations (Min, 2004). This is tantamount to taking neither relative or absolute differences into consideration, but only the rank ordering, thus wasting any other information. For instance, according to Spearman's correlations, in the top part of *Table 3* sender 3 is as similar to sender 2 as to sender 4. The Pearson's correlations used by Besova and Cooley (2009); Tedesco (2005) and Sweetser *et al.* (2008) in some ways make matters worse. Such correlations focus on absolute rather than relative differences and consensus issues may act as outliers, inflating all correlations upwards (bottom part of *Table 3*). χ^2 tests in contingency tables are sometimes used to show that there are differences among senders, but they are even less informative as they say nothing about the extent of these differences (e.g., Frederick et al., 2015; Naudé and Froneman, 2003).

Table 3. Spearman's rank correlations (top) and Pearson's correlations (bottom)

	E1	E2	E3	E4	E5	E6
E1	1.000	1.000	.900	.700	.900	.900
E2	1.000	1.000	.900	.700	.900	.900
E3	.900	.900	1.000	.900	.700	.800
E4	.700	.700	.900	1,000	.600	.500
E5	.900	.900	.700	.600	1,000	.700
E6	.900	.900	.800	.500	.700	1.000
E1	1.000	1.000	0.886	0.844	0.984	0.939
E2	1.000	1.000	0.886	0.844	0.984	0.939
E3	0.886	0.886	1.000	0.991	0.807	0.847
E4	0.844	0.844	0.991	1.000	0.770	0.814
E5	0.984	0.984	0.807	0770	1.000	0.924
E6	0.939	0.939	0.847	0,814	0.924	1.000

Source: *Compiled by the author*

In the following section, a statistical analysis framework is presented which resolves the problems that arise in the study of relative differences, suitably focusing on quantitative information and classifying the information about its relative rather than its absolute differences, in addition to representing both the differences between senders and content categories.

4. Compositional analysis

Compositional Data analysis (abbreviated as CoDa in English) is the standard statistical method used when data only contain information about the relative importance of the parts of a whole. The CoDa tradition started with Aitchison's seminal work (1982, 1986) on chemical and geological compositions where only the proportion of each part or component is of interest, since absolute amounts are irrelevant and only tell about the size of the chemical or soil sample (e.g., Buccianti *et al.,* 2006). Nowadays, CoDa spans almost all the hard sciences and has started to be used in several fields of the social sciences, such as education (Batista-Foguet *et al.,* 2015), economics (Fry, 2011), marketing (Vives-mestres *et al.,* 2016), accounting (Linares-Mustarós *et al.,* 2018), tourism (Ferrer-Rosell and Coenders, 2016), values (van Eijnatten *et al.*, 2015), social networks (Kogovšek *et al.,* 2013), time use (Martín-Fernández *et al.,* 2015a) and election studies (Egozcue and Pawlowsky-Glahn, 2011; Liscano Fierro and Ortiz Rico, 2017). Content analysis in the study of the media and media groups and the analysis of AS, which resides in the communication of these media, pose similar problems in all respects as those encountered in chemical and geological analyses. Absolute data are irrelevant and they mostly tell about the theme of the content, its intention, the popularity of the sender, and so on. In this sense, only the proportions of each content category or the relative size of one type of content over another are truly informative.

In the last three decades, CoDa has provided a standardized toolbox for statistical analyses whose research questions are concerned with the relative importance of magnitudes. Dedicated user-friendly software has started to appear (van den Boogaart and Tolosana-Delgado, 2013; Palarea-Albaladejo and Martín-Fernández, 2015; Thió-Henestrosa and Martín-Fernández, 2005), as well as accessible handbooks (Van den Boogaart and Tolosana-Delgado, 2013; Pawlowsky-Glahn and Buccianti, 2011; Pawlowsky-Glahn *et al.,* 2015). What follows is a brief outline of the method.

Let composition **x** be a real positive vector:

$$\mathbf{x} = \left(x_1, x_2, \ldots, x_D \right) \quad \text{with} \quad x_j > 0 \quad \text{for all } j = 1, 2, \ldots, D, \qquad (1)$$

where D is the number of components, in our case, content categories. To focus on the relative importance of the components, **x** is *closed* to a unit sum so that after its closure **z** contains proportions of each content category.

$$\mathbf{z} = C(\mathbf{x}) = \left(\frac{x_1}{S}, \frac{x_2}{S}, \ldots, \frac{x_D}{S} \right) = \left(z_1, z_2, \ldots, z_D \right)$$

$$\text{with } z_j > 0 \quad \text{for all } j = 1, 2, \ldots, D; \quad S = \sum_{j=1}^{D} x_j. \qquad (2)$$

Because of the restriction of fixed sum, most traditional statistical tools, such as mean, correlation and distance, are to a greater or lesser extent meaningless when applied to **z**.

A proper measure of the centre of a sample of n compositions is the closed geometric mean. If g_j is the geometric mean of the sample of the component z_j for all n compositions, the centre is expressed as C $(g_1, g_2, \ldots, g_D)$.

Euclidean distances among individual compositions (senders) are also meaningless (Aitchison et al., 2000). Euclidean distance considers that the pair of proportions 0.01 and 0.02 are as mutually distant as 0.11 and 0.12, while in the first pair the difference is 100% and in the second it is less than 10%.

4.1. Transformations, association and distance

The most common CoDa approach is to express an original compositional vector of D components in logarithms of ratios among components (Aitchison, 1986; Egozcue *et al.,* 2003). The main arguments for log-ratios are that they constitute a natural way of distilling the information about the relative size of components and they form the basis for defining association and distance in a meaningful way. Log-ratios may, for instance, be computed among each part and the geometric mean of all the components, in the so-called *centred log-ratios:*

$$\ln\left(\frac{z_j}{\sqrt[D]{z_1 z_2 \cdots z_D}}\right) \tag{3}$$

with $j = 1, 2, \ldots, D.$

Aitchison's distance between two senders' content compositions **z** and **z*** considers that zero distance corresponds to identical content proportions and that two senders are more distant from each other when the difference between their log-ratios is likewise larger. Aitchison's distances can also be expressed directly in terms of centred log-ratios (3) as:

$$d\left(\mathbf{z}, \mathbf{z}^*\right) = \sqrt{\sum_{j=1}^{D}\left(\ln\left(\frac{z_j}{\sqrt[D]{z_1 z_2 \cdots z_D}}\right) - \ln\left(\frac{z_j^*}{\sqrt[D]{z_1^* z_2^* \cdots z_D^*}}\right)\right)^2} \tag{4}$$

Using log-ratios attaches greater importance to the distances of the differences in content categories with low proportions.

4.2. Zero replacement

As is well known, computing log-ratios implies that **z** cannot contain zero values. If the **z** vector contains zeros, they must be replaced beforehand (Martín-Fernández et al., 2011). When, like in this case, the data are counts of frequencies, the common framework for replacing the zeros is the *Bayesian-multiplicative approach* (Martín-Fernández *et al*., 2015b; Pierotti *et al.,* 2009) In the Bayes-Laplace's rule, the z cero values are replaced with:

$$z'_j = \frac{1}{S + D}, \text{ for } z_j = 0 \tag{5}$$

Non-zero z values are reduced by so-called multiplicative replacement to preserve the unit sum and the ratios among non-replaced components, among other properties (Martín-Fernández *et al.,* 2003):

$$z'_j = z_j \left(1 - \sum_{z_j=0} z'_j \right), \text{ for } z_j > 0 \tag{6}$$

The fact that zero replacement methods assume that most of the values are larger than zero must be taken into consideration. For alternative treatment methods for data with prevalent zeros see Greenacre (2011).

4.3. The CoDa biplot

Like standard data, compositional data require visualization tools to help researchers interpret large data tables with various senders and many content categories. To this end, Aitchison (1983) extended the well-known principal component analysis procedure to the compositional case. The extension boils down to submitting centred log-ratios (3) to an otherwise standard principal component analysis. Together with Gabriel's (1971) biplot, which jointly represents cases and variables in a principal component analysis, this served as the basis for Aitchison and Greenacre (2002) developing CoDa biplots.

A CoDa biplot can be understood as the most accurate representation of a compositional table in two dimensions. As in standard principal components, overall biplot accuracy can be assessed from the percentage of explained variance for the first two dimensions. More specifically, the form biplot optimises the representation of Aitchison's distances among senders. The content categories appear as rays emanating from a common origin and senders appear as points. The interpretation is as follows (see Aitchison and Greenacre, 2002; Van den Boogaart and Tolosana-Delgado, 2013; Pawlowsky-Glahn et al., 2015 for further details):

1.   Distances between two points are approximately proportional to Aitchison's distances (4) between the two senders. Senders with similar content compositions appear close together.
2.   The lengths of the content category rays are proportional to the quality of the representation of components in the two-dimensional space, whose average across all components is the percentage variance explained by the two first dimensions.
3.   The orthogonal projection of the senders in the direction defined by a ray shows an approximate ordering of the importance of that content category for each sender and can be used to show how the content category contributes to differentiating senders.
4.   The origin of all the rays is both the coordinate centre and the geometric mean. A sender close to this centre behaves like the geometric average of all the senders with regards to its content share.

5. Content analysis

To obtain the visualization of intermedia AS by the main Spanish political parties' and media groups' AS on Twitter during the period of the Spanish general election in 2015, we use a mixed methodology based on content analysis (Berelson, 1952; Krippendorff, 2004; Wimmer *et al.,* 2006) to gather data from Twitter and the media groups. Taking the complexity of the systematization of the data in two

such different and distinct environments into consideration, the following global and specific premises were considered when gathering the information.

I. Delimiting the time period:

The study focuses on the the 2015 Spanish general election, and more specifically on the 31-day period from the beginning of the electoral campaign on 4th December 2015 to 4th January 2016, which were the two weeks prior to and immediately following the election held on 20th December 2015. A balance is thereby obtained between the analysis of the days of the electoral campaign itself and the days of the post-electoral campaign, omitting the day of the election itself due to the media groups altering their standard programming on that day.

II. Delimiting the space:

In this case, the data gathered on Twitter for the political parties is differentiated from the data compiled for the media groups. Regarding the latter, the media outlets (TV channels, radio broadcasters and/or the press) with integrated coverage across the whole country that impart general information (or thematic information about political opinion) and with political opinion/discussion spaces were selected. To ensure the reliability of this choice, the media outlets were also selected based on data gathered in the General Media Study (EGM) from October 2015 to May 2016 [6] and compared with data from the OJD platform (Audit Bureau of Circulations) and the *Kantar Media* study. The results of this selection process coincided with the former. The following premises were also considered: i) Regarding the press, all the generalist newspapers with integrated coverage across the whole country were selected (*El País, Abc, El Mundo, La Razón* and *La Vanguardia*). Furthermore, these five newspapers 'outline a spectrum that goes from *El País* to *Abc*, spanning practically all the ideological opinions with political representation in our country' (López García 2004:15); ii) Regarding radio media (RNE, Ser, Cope, Onda Cero and esradio) and TV media (TVE, 24h, Antena 3, La Sexta, Telecinco and Cuatro) all the 'non-paying' general information media outlets were selected, in addition to the non-paying themed political opinion media such as '24h', except for the COPE group's TV channel '13TV', which was discarded because its audience data could not be compared as it did not participate in the audiences report of the Spanish communications media offered by *Kantar Media*.

Regarding the political parties on Twitter, we gathered their data and compiled a database with the stream [7] of the set of tweets posted on the official Twitter accounts of the parties with a sole constituency in Spain who were later represented in parliament: PP, 1650 tweets; PSOE, 2825 tweets; Podemos, 7279 tweets; Ciudadanos-C's, 2918 tweets; and IU, 7673 tweets. The parameters set in each parties' stream of tweets from which the database was subsequently compiled were: date the tweet was posted, the time, the content of the tweet and if it was a re-tweet. With the aim of working with a representative sample of tweets that could be compared between parties, we then fixed a random systematic selection of 1000 tweets per party, which ensured proportional representation according to the date the tweets were posted. A database comprised of each party's 1000 tweets (5000 tweets in total from the five parties) was then structured and each tweet codified.

III. Delimiting the theme:

The media groups, in particular referring to the press articles, were analysed and codified with a sole codifier based on their printed version as this is a more reliable way to decide which of them fit into the genre of political opinion due to their formal structure and content. Thus, all the opinion articles from the different sections of each newspaper were gathered, excluding the editorials, because following Marques de Melo (1985) these 'conceal a relationship of dialogue with the state,' even when they are formally directed at public opinion. Within the context of radio and TV programmes with sections of talk shows about politics, these were codified based on the web portal of each programme and from the respective 'a la carte' audiovisual publications libraries after analysing the entire debate for each programme in the set that was broadcast during the delimited time period.

Table 4. Media groups, the media and the number of pieces analysed

MEDIA GROUPS	PROPERTY OF THE MEDIA	TELEVISIONS				RADIOS				NEWSPAPERS
		TVE			24h	RNE				
RTVE	*TVE, 24H, RNE*: Ministry of the Presidency and for Territorial Administrations, Government of Spain.	Los Desayunos de TVE	La mañana	El debate de la 1	La noche en 24h	Las mañana de RNE	24h			
		13	18	2*	12	19	16			
						SER				
PRISA	*SER*: 100% Prisa Radio. *El País*: 100% Prisa Noticias.					Hoy por hoy	Hora 25			EL PAÍS
						21	19			66
VOCENTO	*ABC*: 100% Comeresa Prensa.									ABC
										149
UNIDAD EDITORIAL	*El Mundo*: 100% Unidad Editorial, Información General.									El Mundo
										153
						COPE				
COPE	*COPE*: 43% Radio Popular + participation of Spanish Episcopal Conference (52%) and La Información (5%).					Herrera en COPE	La Linterna			
						18	17			
		Antena 3	La Sexta			ONDA CERO				
ATERSMEDIA	*Antena 3 y La Sexta*: 100% Atresmedia. Onda Cero: Uniprex and 100% Atresmedia.	Espejo Público	Al rojo vivo	La Sexta noche	Más vale tarde	Más de uno	Julia en la Onda	La Brújula		La Razón
		20	20	4*	20	18	18	17		
PLANETA CORPORACIÓN	*La Razón*: 28% Audiovisual Española 2000 + participation of Planeta Corporación (57%) and Antena 3 Noticias (15%).									La Razón
										149
GRUPO GODÓ	*La Vanguardia*: La Vanguardia Ediciones, 100% participation of Gupo Godó de Comunicación.									La Vanguardia
										138
		Telecinco	Cuatro							
MEDIASET ESPAÑA	*Telecinco* and *Cuatro*: 100% Mediaset España Comunicación.	El Programa de Ana Rosa	Las Mañanas de Cuatro	Un tiempo nuevo						
		18	19	2**						
						esradio				
LIBERTAD DIGITAL	*esradio*: 100% Libertad Digital.					Es la mañana	Es la tarde de Dieter	En Casa de Herrero	Sin Complejos	
						20	18	18	9***	

* Weekly program.
** Weekly program cancelled in the second half of observation.
*** Weekly program (weekend).

Source: *Compiled by the author*

In line with these delimitations, a first database was compiled that included the set of political opinion articles from the five newspapers and the set of radio and TV political debates broadcast by the media outlets included in the study. *Table 4* shows that a total of 376 political debate spaces from the sample group of radio and TV programmes and 655 political opinion articles from the headlines selected from

the press were codified and the following data gathered: date broadcast/published, the media outlet, the total number of debates (except for opinion articles that only indicate the contributor), the genre of the participants and the identification of the content of the piece based on key words, which were proposed based on the codification of the issues that appear in each piece in an accumulative way, up to a maximum of six issues per piece.

The tweets were codified manually with a codifier, taking the set of issues covered in each tweet into consideration, and this information was compiled in a second database. The need to know the exact content of each tweet led us to rule out other methods, such as text mining, because while in some cases a content could be associated with a certain key word or words easy to detect with this method (e.g. terrorism), in others this was not possible (e.g., constitution, which depending on the context could refer to compliance with it (within the framework of the Catalan process) or its reform)

From the article about the press content during this same electoral process (author et al., 2017), the codification study of the debate spaces on radio/TV programmes and the first 1000 tweets analysed for each political party (5000 in total), a list of 350 issues was created and between one and six of these were assigned to each piece, be it a press opinion article, a radio or TV debate or a tweet from a political party, according to the issues they covered. The 350 issues were then grouped by conceptual similarity into 34 broad categories, from which 18 with sufficient weight were selected, from now on referred to as the top18, to represent the AS for the period under study. **(1) pacts** (the politics of pacts between parties, dialogue, understanding, forming a government, the great coalition pact PP-PSOE, in favour of a national pact PP-PSO-C's, pact C's-PSOE, governing from the centre, from the presidency of Congress, and so on; (2) **Catalan independence** (against nationalism/separatism, sovereignty of the Spanish nation, in favour of Spanish unity, conservatism and against the right to decide in Catalonia, Catalan cultural policy, difficulties in forming an autonomous government in Catalonia, in favour of an agreed, legal referendum in Catalonia, and so on; (3) **gender inequality and domestic violence** (on sexist comments from certain politicians, proposals for the law on domestic violence, labour conciliation, sexual abuse, violence against women, and so on; (4) **terrorism** (the Syrian war, jihadism, DAESH, ISIS, ETA, and so on); (5) **corruption** (tax amnesty, under indictment, tax fraud, parliamentary immunity, IMF Lagarde case, and so on); (6) **politainment** (candidates' participation in talk shows, political discussions or entertainment shows); (7) **economy/crisis** (the global economy, the Spanish economy, austerity, cutbacks, economic recovery, bailout, at risk of poverty, campaign promises about Personal Income Tax and taxes, and so on); (8) **institutional stalemate** (ungovernability, post-electoral state, blockage in forming a government, failure to reach an agreement); (9) **education** (reform of the Law on Education, Vocational Training, grant system, academia and science, and so on); (10) **regeneration/change** (old politics, new parties, end of the two-party system, the traditional parties, resistance to change, fragmentation of parties and votes, and so on); (11) **constitutional reform** (national transition, territorial reform of the privileges of the Spanish regions, and so on); (12) **statistics and CIS** (publishing statistics, CIS –Centro de Investigaciones Sociológicas [Sociological Research Center], evolution of the vote during campaigns, electoral law, election exit polls, and so on); (13) **voting/electoral process** (campaign launch, floating vote, anarchy and not voting in elections, tactical voting, postal voting, reflection forum, electoral commission, and so on); (14) **debates** (following electoral debates on TV); (15) **international politics** (Spanish-European relations, European politics, refugees, international politics, and so on); (16) **the environment** (climate change, the environment, Paris Congress, and so on); (17) **PSOE crisis** (PSOE

leadership crisis, internal dispute between socialist barons, and so on); (18) **assault on Rajoy** (youth assaulting President Rajoy during a campaign rally).

6. Results

The results derived from applying the CoDa method to the data obtained from the content analysis are shown below. In essence, this is the visualization of intermedia AS by the two actors, the main media groups (media agenda) and the main political parties (political agenda), for the 2015 electoral period. Following the framework set out in *Table 4* and taking into consideration the data on the set of tweets codified for the political parties, intermedia AS by the media outlets and political parties is represented within the structure of the biplot.

Figure 1. Form biplot of the top18 issues in the electoral campaign period by media groups and political parties
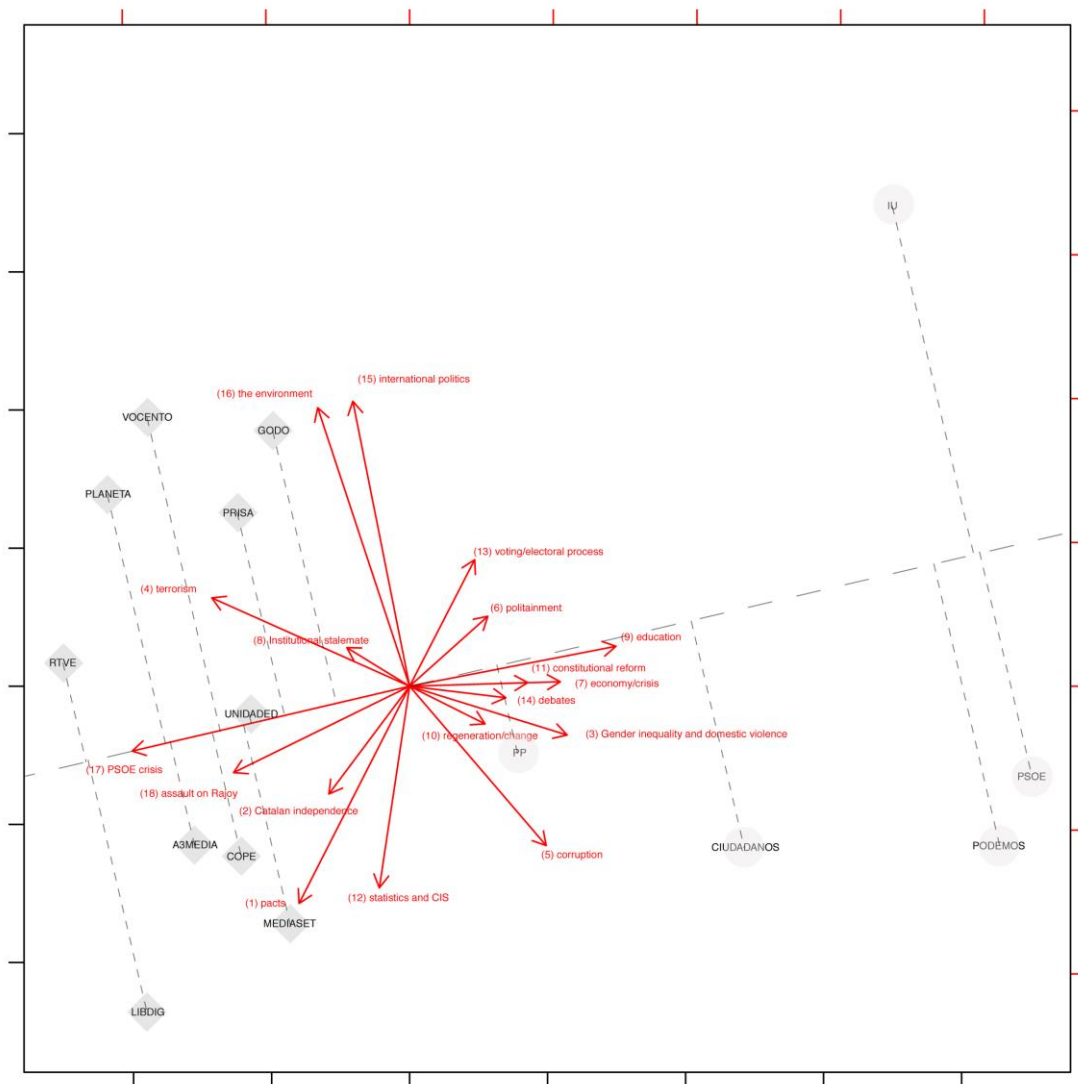
Source: *Compiled by the author*

Figure 1 shows the intermedia AS for the whole period and from the form biplot, which locates the top18 issues and their senders (media groups and political parties) under the premise that the interest lies in the relative/comparative volume of the contents and not in the absolute volume which, as discussed earlier, traditional statistical methods do not allow for. A first formal reading notably reveals that the degree of representation of the variables-vectors (issues) in the analysis of principal components is highly reliable, given that the first two components together explain 67.7% of the total variance.

On a different note, the closed geometric means of the top18 issues in *Table 5*, which in turn define the origin of the coordinates in the biplot, indicate that the most prominent of these issues across the set of senders are, in this order: *(1) pacts, (2) Catalan independence, (14) debates and (10) regeneration/change*

Table 5. Closed geometric means of the top18 issues

Top18 issues	Closed geometric means
(1) pacts	0.123
(2) Catalan independence	0.114
(3) Gender inequality and domestic violence	0.035
(4) terrorism	0.031
(5) corruption	0.063
(6) *politainment*	0.045
(7) economy/crisis	0.062
(8) Institutional stalemate	0.074
(9) education	0.016
(10) regeneration/change	0.103
(11) constitutional reform	0.033
(12) statistics and CIS	0.025
(13) voting/electoral process	0.096
(14) debates	0.114
(15) international politics	0.024
(16) the environment	0.010
(17) PSOE crisis	0.017
(18) assault on Rajoy	0.014

Source: *Compiled by the author*

The senders that behave similarly with respect to the content composition of their agendas can be deduced from the form biplot in *Figure 1*. A first general reading, for example, clearly shows that there are two blocks of senders in the set of intermedia AS: All the media groups are located to the left of the horizontal axis and all the political parties are located to the right of it. In other words, the AS issues that are covered proportionally more by opinion formers from media groups and the vector-issues that are the focus of interest in the communication of the political parties are quite clearly distinct. We can thereby conclude that the media groups send similar compositions on the horizontal

axis (from right to left), such as *(4) terrorism, (8) Institutional stalemate, (17) PSOE crisis and (18) assault on Rajoy*; and that this content is markedly different from that of the political parties (from left to right), who in this case focus more on: *(9) education, (11) constitutional reform, (7) economy/crisis, (14) debates, (3) inequality and domestic violence and (10) regeneration/change.*

In this regard, some senders are notably prominent, namely the political party IU and the media outlets Libertad Digital, Vocento and RTVE. IU is obviously distanced not only from the most prominent issue composition among the political senders, but also from the overall construction of intermedia AS. Libertad Digital and Vocento, followed closely by RTVE, stand out as the outlets that are furthest from the centre of coordinates that make up the issues-vectors, an aspect that is especially interesting in terms of constructing this visualization method as it serves to interpret the *level of proportionality in establishing the issues of each sender* in relation to the top18 group that comprise the representation of intermedia AS. In other words, if we take the centre of the diagram as the paradigm of proportionality (i.e., the point that corresponds to the senders that cover the set of top18 issues in the same proportion as the overall proportion of all the senders) and we look at the distance of each sender from the centre, we can order the senders that most closely to least closely mirror this proportionality in their coverage of the set of issues analysed. From this perspective and based on a general reading of the political parties and the media groups, it can be seen that the sender that covers the top18 issues in a proportion most similar to the overall proportion of the set of parties is PP. IU, on the other hand, is the sender whose coverage of the top18 issues mirrors the overall proportion least; in other words, certain issues occupy more space in their agendas than others. Another interesting point is that the political party senders tend to be further away from the centre of coordinates in comparison to the media groups, who share a similar axis on the distances to the centre of coordinates.

The relative position of each content sender in relation to the centre indicates that from IU (the furthest from the centre) to PP (the nearest) there is a scale of inequality in the coverage of the issues set on the agenda. In other words, this scale corresponds to a group of senders talking 'a little about a lot of issues' (most obviously the case of PP) or 'a lot about few issues' (which is clearly the case of IU). Also worth highlighting, and as mentioned earlier, the state-owned media group RTVE is considerably distant from the centre of proportionality of the AS, with its axis located on the theme line (17) *PSOE crisis*, (18) *assault on Rajoy* and (4) *terrorism*. However, if we look at the political senders and the media outlets separately, the following points must be made: in the former group there is an obvious grading effect that goes from PP, through C's and Podemos to PSOE and IU in relation to 'talking a little about a lot issues' to 'talking a lot about a few issues'; whereas, interestingly, two spaces of media outlets groups are created depending on whether they are associated solely with the press (top left of *Figure 1*: Vocento, Godó, Planeta and Prisa, even though the latter includes the radio station Cadena SER) or with audiovisual media (bottom left, paying particular attention to Mediaset, Atresmedia, COPE and Libertad Digital).

As defined earlier in the section on the methodological composition, in the biplot in *Figure 1* the study focus is the issues that make up intermedia AS and their relationships with the senders. In brief, these relationships that are established among issues and senders in terms of proportionality outline a particular scenario for each sender of intermedia AS and the issues that are covered to some degree. Furthermore, they also reflect the similarities and differences in the prioritization of the issues in the agendas proposed by the different senders. For example, if we project the media outlets orthogonally in the direction of the content (17) *PSOE crisis* (letting them fall at an angle of 90 degrees to the

direction defined by each vector-issue as represented by the broken line), two important phenomena can be seen: i) in the proportional order of the senders covering this issue from most to least, we find first the entire block of media outlets (media agenda) followed by the political parties (political agenda); ii) notably, RTVE together with Libertad Digital are the senders that cover the PSOE crisis most, while it is PSOE themselves together with IU who cover this issue least within the context of intermedia AS.

In this way, each issue can be associated with certain senders. As previously indicated, the issues oriented particularly along the horizontal axis are representative, indicating the differences between the most prominent issues in the political agenda and in the media agenda. Focusing now on the issues located more along the vertical axis, we find IU, Godó, Vocento and Planeta with *(15) international politics* and *(16) environment*; IU with *(13) voting/electoral process* and *(6) politainment*; Libertad Digital, Mediaset, C's, PSOE and Podemos with (5) *corruption*; Libertad Digital, Mediaset, A3media, COPE, C's and Podemos with *(12) statistics and CIS*; Libertad Digital, Mediaset, A3media and COPE with *(1) pacts and (2) Catalan independence.*

The visualization of the biplot on the compositional treatment of the data takes on another significance level in the transition from a static visualization model of intermedia AS to a dynamic conception. A practice widely used among academics interested in the AS theory consisting of comparing the agendas of one or more actors (for the context of intermedia AS) in two different time periods must be developed to shape this dynamic representation. Following this structure, a dynamic scenario to study the agenda is thus shaped here which, within the context of compositional analysis and its representation with biplots, is especially interesting to visualize the dynamics of the presence/absence or omission/signification of issues. In other words, this representation allows the dynamics established by the thematic hierarchization process and AS itself to be visualized, resulting in the signification of certain issues to the detriment of others, which are relegated or omitted depending on the time context.

With the aim of addressing a dynamic scenario, the different agendas (media and political) of the senders during the electoral campaign period (the two weeks prior to the election, represented by a 1 in the following biplots) and the post-electoral period (the two weeks immediately after the election, represented by a 2) are presented. Within this context, six of the top18 issues had to be dispensed with because during the process of differentiating the senders in two blocks issues with zeros in most in the senders proliferated; in other words, the issues not covered or given very little coverage in the two periods (e.g., (14) *debates*, which is clearly associated with the campaign period and (8) *Institutional stalemate*, associated with the post-electoral period). Thus, to not compromise the high degree of reliability, this section of results is based on the top12 group of issues, eliminating from the top18 composition: (3) *inequality and domestic violence*, (8) *Institutional stalemate*, (10) *regeneration/change*, (14) *debates*, (16) *environment*, (17) *PSOE crisis* and (18) *assault on Rajoy.* Together the top12 group explain a reasonable 53.3% of the total variance for the first two components and their centre is defined by the following closed geometric means:

Table 6. Closed geometric means of the top12 issues

Top12 issues	Closed geometric means
(1) pacts	0.189
(2) Catalan independence	0.168
(4) terrorism	0.042
(5) corruption	0.078
(6) *politainment*	0.060
(7) economy/crisis	0.070
(9) education	0.025
(10) regeneration/change	0.127
(11) constitutional reform	0.043
(12) statistics and CIS	0.032
(13) voting/electoral process	0.128
(15) international politics	0.037

Source: *Compiled by the author*

Figure 2 illustrates how in the transition phase between the electoral campaign period (where the senders are identified by a 1) and the second post-electoral (identified by a 2) behaviour complementary to the previous statistical visualization in *Figure 1* can be deduced. More specifically, if again the space is divided by the axis of ordinates that crosses the point of origin of the coordinates, what can be seen is a group of issues on the left that are clearly associated with the electoral campaign period and a group on the right that are obviously positioned in the post-electoral phase. Furthermore, of particular interest is the fact that the second period (post-electoral) is dominated, proportionally speaking, by just two of the 12 issues, namely *(2) Catalan independence and (1) pacts.* Six issues are located in an intermediate space between periods: *(13) voting/electoral process, (15) international politics, (4) terrorism, (11) constitutional reform, (5) corruption and (9) education*, indicating similar coverage among senders during the two periods. At the same time, we can see how in the electoral campaign period the political parties and the media outlets are still dispersed like in the previous figures, while in the post-electoral period the agendas of the two sender groups are appreciably closer to one another. In effect, focusing on the post-electoral context, two parties can be seen to coexist in the top right-hand quadrant of the biplot (PP and C's) together with five media groups (RTVE, Libertad Digital, Atresmedia, Mediaset and COPE), while in the lower right-hand quadrant there is only the political party PSOE sharing the space with the groups Godó, Planeta, Unidad Editorial, Prisa and Vocento. Furthermore, the parties Podemos and IU are the only senders distanced from the issues shared by all the other senders in the second post-electoral period. In both cases, the only quadrant change is in the left space of the biplot (from the first period, where it is found in the upper space, to the second period, where it is located in the lower space), an aspect which defines the two parties in a composition similar to the issues whose vectors go from right to left or from left to right for both periods, far removed from the dynamics of the other senders in the transition period from the electoral campaign period to the post-electoral period. In relative and comparative terms, in the post-electoral period Podemos and IU focus their tweets more on *(13) voting/electoral process, (15) international politics and (4) terrorism* compared with in the electoral campaign period.

Figure 2. Form biplot of the AS of the top12 issues, dispersed by two-week periods and by media and political groups
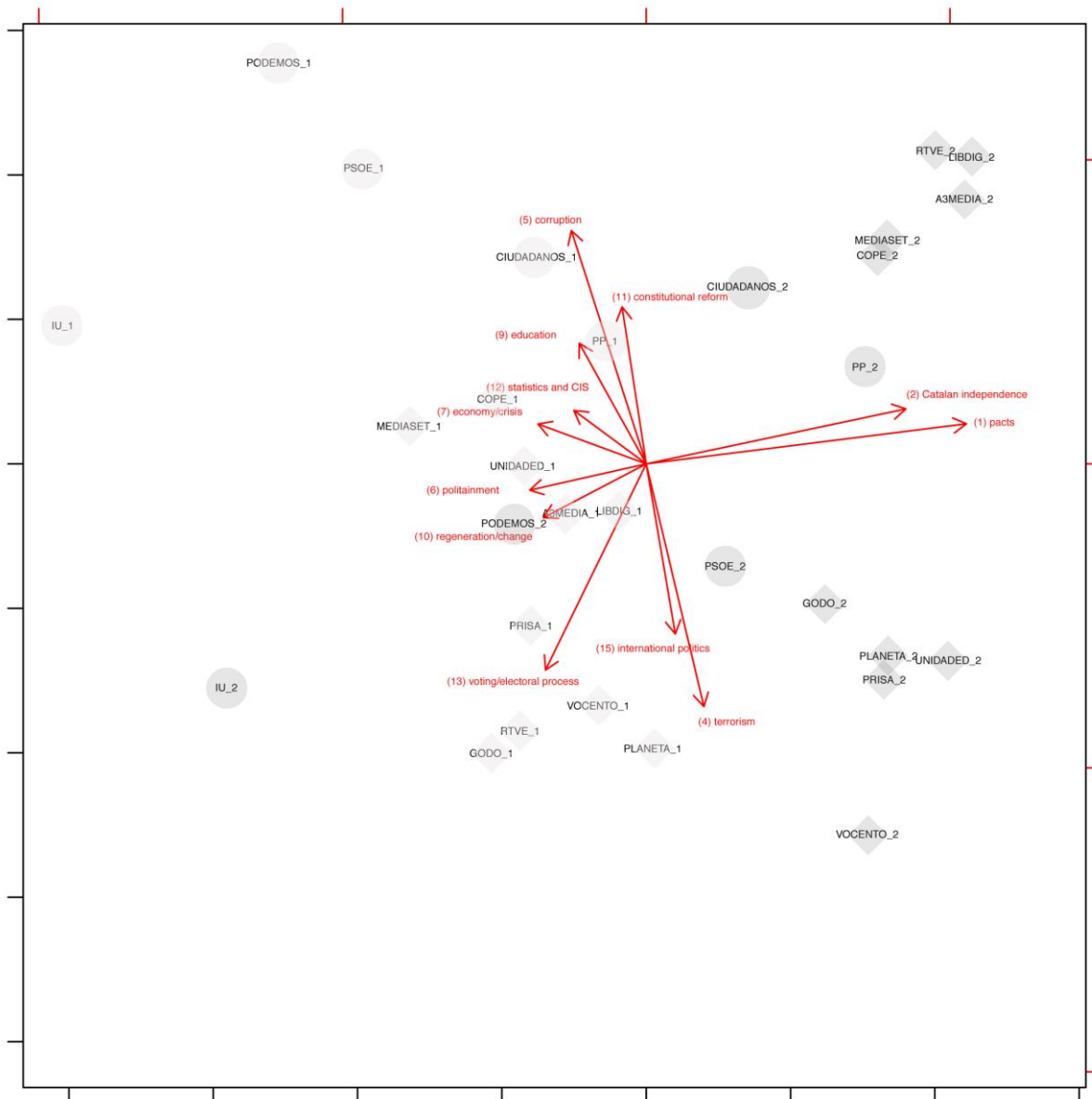
Source: *Compiled by the author*

Two important aspects of *Figure 2* must be highlighted: First, we see how like in *Figure 1* with the top18 issues, there is a concentration of media outlet senders on the electoral campaign issues and, consequently, a similar composition of media agenda. The political agenda, on the other hand, is more dispersed. Furthermore, the composition of issues that are covered comparatively more in the first period (*12) statistics and CIS, (7) economy/crisis, (6) politainment and (10) regeneration/change* is clearly broader than in the second period (where only two of the twelve issues *(2) Catalan independence and (1) pacts* make up the thematic composition). As pointed out previously, this phenomenon indicates than in the electoral campaign space the agenda is characterised by talking 'a little about a lot of issues', while in the post-electoral campaign, where the composition of issues is

much more concentrated, there is a tendency to talk 'a lot about a few issues.' The second characteristic identified in *Figure 2* is again related to the composition of media outlet senders in the biplot in the two periods. Like in the previous biplot, again in the second period there is a concentration of media outlets related to the press, as opposed to audiovisual outlets. This characteristic appears altered in the first time period, where this differentiation is not as noticeable. In short, an interesting composition of media outlets that depends on their type is visualised in the electoral and post-electoral spaces.

Last, it is important to remember that the fact that the media groups (media agenda) and the political parties (political agenda) do not share a same issue composition space in the biplot does not mean that they do not share a same agenda. It must be borne in mind that the issues that make up the intermedia AS were delimited beforehand by means of a content analysis and a codification/categorization process that was identical for both senders. In this sense, the effects of the dispersion of issues, visualized in certain periods among the political parties and media outlet senders, add value to a proportional prominence of the issue composition depending on the type of senders and under a same agenda scenario. Thus, if the thematic space is constructed under a same content framework, it is also true that the compositional approximation promotes the study of the proportional importance of each issue in the AS.

7. Discussion and conclusions

Applying the compositional focus CoDa to the study of intermedia AS, in this case through the media and political agendas during the period of the 2015 Spanish general election, allowed us to visualise not only the agendas of each sender, but also intermedia AS by the actors in an intuitive way. It also helped to focus the analysis on the relative importance of each content to identify in a diaphanous way which parts of the whole emphasise which contents, which parts are more similar to or dissimilar from each other, which contents are presented in similar or dissimilar ways by the parts and even which contents are subject to a process of omission/prioritization. Likewise, applying this method allowed us to define the distances between senders (media outlets and political parties) in a meaningful way, emphasising the factor of proportions and avoiding the methodological flaws of the methods based on correlations, rankings, frequencies and χ^2 tests.

Regarding the case study on the intermediation of the media and political agendas, some contributions must be highlighted. This study has proven the advantages of observing the intermediation processes of the agendas of different actors compositionally when the goal is to simultaneously locate each sender within the context of a proportional content composition and to visualize the interrelations between the other actors that define the composition of the agenda. Furthermore, the comparative analysis of the agendas also facilitates comparing actors by type (political and media actors and, in the case of the media, the audiovisual media and the press), thus contributing to an exercise of primary analysis among equals, which is complemented in the second level of study by the type of each sender within the observed set. Last, the contribution of the method in its dynamic phase on compared periods of time must be pointed out as this facilitates identifying the volume and content of the issues that characterise the agenda in each cycle, in addition to the composition of senders and, consequently, the effect of the framework on the agendas that these represent.

This same method is also highly recommended for paradigms of data collection based on text mining and to visualise content analysis processes in communication sciences, especially those derived from

media studies. More specifically, within the field of communication sciences this research has demonstrated the usefulness of the method for visualizing the representation of intermedia AS in the study of media and political agendas. The study on the presence/absence of issues and their evolution over two compared periods of time serves as a pretext to visualise the agendas in a proportionality space, which contributes to reaching significantly more complete conclusions. This research has taken the prominence of issues among the agendas of different actors (media and political) to the field of compositional representation, in line with the postulates of the first perspective of the *Acapulco typology* (McCombs, 2006). Furthermore, the study proposes a methodological tool that is more focused on the importance of the relative among issues and senders that can be used for both cross-sectional and longitudinal studies.

In conclusion, an oft-mentioned limitation of CoDa must be mentioned: it is not a suitable method for sparse data tables. As stated previously, zero replacement methods (Martín-Fernández et al., 2015b) when their number is reduced do exist. Nonetheless, this limitation can be minimised by developing AS studies with a larger volume of data covering more articles, programmes, tweets, and so on, and also by applying a two-stage issue codification/categorisation process that allows various sub-issues to be included within a similar broader issue (category), known as amalgamation in CoDa terminology. Additionally, for studies on intermedia AS where the spectrum of senders is wider, groups of media outlets or political party coalitions could also be amalgamated and explained under certain premises. Last, attention must be paid to dynamic visualization spaces which, as mentioned previously, can entail the proliferation of zeros when there are issues that completely stop being covered in a delimited period. As a first solution in the case of the present study, the group of issues was reduced in number by eliminating those linked to a single period, even though this limitation could also have been overcome by constructing the agenda with issues represented in both study periods.

8. Notes

[1] Opinion makers are understood here to be the group of actors that are invited by the mass media within the context of media debate to participate by manifesting an idea or opinion, in particular on current affairs talk shows on TV or on the radio or as columnists in the press).

[2] Opinion makers are understood here to be the group of actors that are invited by the mass media within the context of media debate to participate by manifesting an idea or opinion, in particular on current affairs talk shows on TV or on the radio or as columnists in the press).

[3] The present content analysis follows the seminal study by McCombs and Shaw (1972), who distinctly naturally integrated media information from the local press and TV under the construction of media agendas. The recommendations posited by McCombs, which we broaden to include audiovisual media services, are also followed to the press opinion articles as viable supports for knowing the media agenda (McCombs, 2006).

[4] Access to the Infoadex study 2016: http://bit.ly/2lzBiak

[5] *Kantar Media* is the data investment management arm of the British multinational company WPP (*Wire and Plastic Products*) and one of the largest information and consultancy groups in the world: https://www.kantarmedia.com/es

[6] Access to the General Media Study (October 2015 to May 2016): http://bit.ly/2iX8K9y

[7] The stream of tweets was provided by the Spanish communications agency DNOISE, by means of the Twitter monitoring tool 'Followthehashtag'. http://www.followthehashtag.com

9. Bibliographical references.

Aitchison, J. (1982). "The statistical analysis of compositional data". *Journal of the Royal Statistical Society. Series B (Methodological)*, 44, 2, 139–177.

Aitchison, J. (1983). "Principal component analysis of compositional data". *Biometrika*, 70, 1, 57–65.

Aitchison, J. (1986). "The statistical analysis of compositional data". *Monographs on Statistics and Applied Probability*. Chapman and Hall, London.

Aitchison, J., Barceló-Vidal, C., Martín-Fernández, J.A., Pawlowsky-Glahn, V. (2000). "Logratio analysis and compositional distances". *Mathematical Geology,* 32, 3, 271-275.

Aitchison, J., Greenacre, M. (2002). "Biplots of compositional data". *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 51, 4, 375-392.

Batista-Foguet, J.M., Ferrer-Rosell, B., Serlavós, R., Coenders, G., Boyatzis, R.E. (2015). "An alternative approach to analyze ipsative data. Revisiting Experiential Learning Theory". *Frontiers in Psychology*, 6, 1742.

Berelson, B. (1952). *Content analysis in communication research*. New York, Hafner.

Besova, A.A., Cooley, S.C. (2009). "Foreign News and Public Opinion: Attribute Agenda-Setting Theory Revisited". *Ecquid Novi: African Journalism Studies*, 30, 2, 219-242, DOI: 10.1080/02560054.2009.9653403

Blasco-Duatis, M., Fernández García, N., Cunha, I. (2017). "Political opinion in the Spanish newspapers. Analysis of the period General Elections campaign in Spain, 2015". *Revista Latina de Comunicación Social*, 72, pp. 349 to 373. DOI: 10.4185/RLCS-2017-1169

Blumler, J.G., Gurevitch, M. (1995). *The Crisis of Public Communication*. London: Routledge.

Blumler, J., Kavanagh, D. (1999). "The third age of political communication: Influences and features". *Political Communication*, 16, 209–230.

Bruder, K. (2008). *AgendaSetting of International News in the United States and Its Decline by Using New Technologies*. Communication Senior Seminar. Alma College, California.

Buccianti, A., Mateu-Figueras, G., Pawlowsky-Glahn, V. (2006). *Compositional Data Analysis in the Geosciences: From Theory to Practice*. London: Geological Society.

Cohen, B. (1963). *The press and foreign policy*. Princenton University Press, New York.

Conway, B. A., Kenski, K., Wang, D. (2015). "The rise of Twitter in the political campaign: Searching for intermedia agenda-setting effects in the presidential primary". *Journal of Computer-Mediated Communication*, 20, 4, 363-380.

Cui, D., Wu, F. (2017). "Inter-media agenda setting in global news production: examining agenda attributes in newspaper coverage of the MH370 incident in the U.S., China, and Hong Kong". *Asian Journal of Communication*, DOI: 10.1080/01292986.2017.1305426

Egozcue, J.J., Pawlowsky-Glahn, V., Mateu-Figueras, G., Barceló-Vidal, C. (2003). "Isometric logratio transformations for compositional data analysis". *Mathematical Geology*, 35, 3, 279–300.

Egozcue, J.J., Pawlowsky-Glahn, V. (2011). "Basic concepts and procedures". En V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications*, 13-28. New York, NY: Wiley.

Eijnatten, F.M., Van der Ark, L.A., Holloway, S.S. (2015). "Ipsative measurement and the analysis of organizational values: an alternative approach for data analysis". *Quality & Quantity*, 49, 2, 559-579.

Ferrer-Rosell, B., Coenders, G. (2016). "Destinations and crisis. Profiling tourists' budget share from 2006 to 2012". *Journal of Destination Marketing & Management*, DOI: 10.1016/j.jdmm.2016.07.002

Fishman, M. (1983). *La fabricación de la noticia*. Tres Tiempos, Buenos Aires.

Frederick, E.L., Burch, L.M. Blaszka, M. (2015). "A shift in set: examining the presence of agenda setting on twitter during the 2012 London Olympics". *Communication & Sport*, 3, 3, 312-333.

Fry, T. (2011). "Applications in economics". En V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications:* 318-326. New York, NY: Wiley.

Gabriel, K.R. (1971). "The biplot-graphic display of matrices with application to principal component analysis". *Biometrika*, 58, 3, 453-467.

Gonzenbach, W. y McGavin, L. (1997). "A brief story of time: A methodological analysis of agenda setting". En McCombs, M., Shaw, D. y Weaver, D. (Eds.), *Communication and Democracy: Exploring the intellectual Frontiers in Agenda-setting theory*, 115-136. EEUU, Lawrence Erlbaum Associates.

Guo, L., Chen, Y.K., Vu, H., Wang, Q., Aksamit, R., Guzek, D., Jachimowski, M., McCombs, M. (2015). "Coverage of the Iraq War in the United States, Mainland China, Taiwan and Poland". *Journalism Studies*, 16, 3, 343-362, DOI: 10.1080/1461670X.2014.885198

Greenacre, M. (2011). "Compositional data and correspondence analysis". En V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications*, 104-113. New York, Wiley.

Igartua, J.J., Humanes, M.L. (Eds.) (2004). *Teoría e investigación en comunicación social*. Síntesis, Madrid.

Jungherr, A., Schoen, H., Jürgens, P. (2016). "The mediation of politics through Twitter: An analysis of messages posted during the campaign for the German federal election 2013". *Journal of Computer-Mediated Communication*, 21, 1, 50-68.

Kogovšek, T., Coenders, G., Hlebec, V. (2013). "Predictors and outcomes of social network compositions. A compositional structural equation modeling approach". *Social Networks*, 35, 1, 1-10.

Krane, M. (2010). *The socially filtered media agenda: a study of AgendaSetting among news outlets on Twitter*. University of Missouri, Columbia.

Krippendorff, K. (1990). *Metodología de análisis de contenido: teoría y práctica*. Barcelona, Paidós.

Lim, J. (2011). "First-level and second-level intermedia agenda-setting among major news websites". *Asian Journal of Communication*, 21, 2, 167-185, DOI: 10.1080/01292986.2010.539300

Linares-Mustarós, S., Coenders, G., Vives-Mestres, M. (2018). "Financial performance and distress profiles. From classification according to financial ratios to compositional classification". *Advances in Accounting*, DOI: 10.1016/j.adiac.2017.10.003

Lippmann, W. (1922). *Public Opinion*. Macmillan, New York.

Liscano Fierro, J. M., Ortiz Rico, F. A. (2017). *Modelos mixtos para datos composicionales: Una aplicación con resultados electorales en Colombia*. Universidad Santo Tomás, Bogotá.

López García, G. (2004). *Comunicación electoral y formación de la opinión pública: las elecciones generales de 2000 en la prensa española*. Valencia: Servei de Publicacions de la Universitat de Valencia.

Luhmann, N. (1973). *Ilustración sociológica y otros ensayos*. Editorial Sur, Buenos Aires.

Luo, Y. (2014). "The Internet and agenda setting in China: The influence of online public opinion on media coverage and government policy". *International Journal of Communication*, 8, 1289–1312.

Marcinkowski, F. (2014). "Mediatization of politics: Reflections on the state of the concept". *Javnost*, 21, 2, 5–22.

Marques De Melo, J. (1985). *A opinão no jornalismo brasileiro*. Petrópolis, Vozes.

Martín-Fernández, J.A. Barceló-Vidal, C., Pawlowsky-Glahn, V. (2003). "Dealing with zeros and missing values in compositional data sets using non-parametric imputation". *Mathematical Geology*, 35, 3, 253–278.

Martín-Fernández, J.A., Palarea-Albaladejo, J., Olea, R.A. (2011). "Dealing with zeros". En V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications*, 47-62. New York, NY: Wiley.

Martín-Fernández, J. A., Daunis-i-Estadella, J., Mateu-Figueras, G. (2015a). "On the interpretation of differences between groups for compositional data". *SORT-Statistics and Operations Research Transactions*, 39, 2, 231-252.

Martín-Fernández, J.A., Hron, K., Templ, M., Filzmoser, P., Palarea-Albaladejo, J. (2015b). "Bayesian-multiplicative treatment of count zeros in compositional data sets". *Statistical Modelling*, 15, 2, 134-158.

Mazzoleni, G. and Schulz, W. (1999). "Mediatization of politics: A challenge for democracy?". *Political Communication*, 16, 3, 247–261.

McCombs, M. y Shaw, D. (1972). "The agenda-setting function of mass media". *Public Opinion Quarterly,* 36, 2, 176–187.

McCombs, M. (2006). *Estableciendo la agenda*. Paidós Comunicación, Barcelona.

Meraz, S. (2009). "Is There an Elite Hold? Traditional Media to Social Media Agenda Setting Influence in Blog Networks". *Journal of Computer Mediated Communication*, 14, 682–707.

Min, Y. (2004). "Campaign agenda formation: The news media in the Korean congressional election of 2000". *Asian Journal of Communication*, 14, 2, 192-204, DOI:10.1080/0129298042000256767

Naudé, A.M.E., Froneman, J.D. (2003). "Trends in news agenda setting by the Sunday Times and Rapport in 2000". *Ecquid Novi: African Journalism Studies*, 24, 1, 84-98, DOI: 10.1080/02560054.2003.9653262

Neuman, W. R. (1990). "The threshold of public attention". *Public Opinion Quarterly*, 54, 2, 159-176.

Orihuela, J. L. (2008). "Internet: la hora de las redes sociales". *Nueva Revista de política*, cultura y arte, 119, 57-62.

Palarea-Albaladejo, J., Martín-Fernández, J.A. (2015). "zCompositions—R package for multivariate imputation of left-censored data under a compositional approach". *Chemometrics and Intelligent Laboratory Systems*, 143, 85-96.

Parmelee, J. H. (2013). "Political journalists and Twitter: Influences on norms and practices". *Journal of Media Practice*, 14, 291–305.

Parmelee, J.H., Bichard, S. L. (2012). *Politics and the Twitter Revolution: How Tweets Influence the Relationship between Political Leaders and the Public*. Lexington Books, Lanham.

Pawlowsky-Glahn, V., Buccianti, A. (2011). *Compositional Data Analysis. Theory and Applications*. New York, Wiley.

Pawlowsky-Glahn, V., Egozcue, J.J., Tolosana-Delgado, R. (2015). *Modeling and Analysis of Compositional Data*. Chichester, Wiley.

Perlmutter, D. D. (2008). "Political blogging and campaign 2008: A roundtable". *The International Journal of Press/Politics* 13, 160–170.

Pierotti, M.E.R., Martín-Fernández, J.A., Seehausen, O. (2009). "Mapping individual variation in male mating preference space: multiple choice in a colour polymorphic cichlid fish". *Evolution*, 63, 9, 2372-2388.

Ragas, M.W., Kiousis, S. (2010). "Intermedia agenda-setting and political activism: MoveOn.org and the 2008 presidential election". *Mass Communication and Society,* 13, 5, 560-583, DOI: 10.1080/15205436.2010.515372

Revuelta, G. (2006). "Salud y medios de comunicación en España". *Gaceta Sanitaria*, 20, 203-208.

Rogstad, I. (2016). "Is Twitter just rehashing? Intermedia agenda setting between Twitter and mainstream media". *Journal of Information Technology & Politics*, 13, 2, 142-158, DOI: 10.1080/19331681.2016.1160263

Rubio-García, R. (2014). "Twitter y la teoría de la Agenda-Setting: mensajes de la opinión pública digital". *Estudios Sobre el Mensaje Periodístico*, 20, 1, 249-265.

Strömbäck, J. (2008). "Four phases of mediatization: An analysis of the mediatization of politics". *The International Journal of Press/Politics*, 13, 3, 228–246.

Serrano, P. (2010). *Traficantes de información. La historia oculta de los grupos de comunicación españoles*. Madrid, Akal.

Sweetser, K.D., Golan, G.J., Wanta, W. (2008). "Intermedia Agenda Setting in Television, Advertising, and Blogs During the 2004 Election". *Mass Communication and Society*, 11, 2, 197-216, DOI: 10.1080/15205430701590267

Tedesco, J.C. (2005). "Issue and Strategy Agenda Setting in the 2004 Presidential Election: exploring the candidate–journalist relationship". *Journalism Studies*, 6, 2, 187-201, DOI: 10.1080/14616700500057270

Thió-Henestrosa, S., Martín-Fernández, J.A. (2005). "Dealing with compositional data: The freeware CoDaPack". *Mathematical Geology*, 37, 7, 773-793.

Towner, T. L., Dulio, D. A. (2012). "New media and political marketing in the United States: 2012 and beyond". *Journal of Political Marketing*, 11, 95–119.

Van den Boogaart, K. G., Tolosana-Delgado, R. (2013). *Analyzing Compositional Data with R*. Berlin, Springer.

Van der Pas, D.J., van der Brug, W., Vliegenthart, R. (2017). "Political Parallelism in Media and Political Agenda-Setting". *Political Communication*, DOI: 10.1080/10584609.2016.1271374

Vives-Mestres, M., Martín-Fernández, J.A., Kenett, R. (2016). "Compositional data methods in customer survey analysis". *Quality and Reliability Engineering International*, 32, 6, 2115–2125.

Weimann-Saks, D., Ariel, Y., Malka, V., Avidar, R. (2016). "Trends in public and media agenda-setting during the 2015 Israeli elections". *Israel Affairs*, 22, 3-4, 727-742, DOI: 10.1080/13537121.2016.1174386

Wimmer, R. D., Dominick, J. R. (2006). *Mass Media Research: an introduction*. USA, Thomson Wadsworth.

Wolf, M. (1991). *La investigación de la comunicación de masas*. Paidós, Buenos Aires.

_____

5. DISCUSIÓN

Esta tesis ha completado un estudio de la aplicación del método composicional en la teoría de la AS, centrado específicamente en el análisis y mapeo de la agenda de los medios, la agenda política y la intermedia agenda entre sendas anteriores. En este sentido, los objetivos de esta disertación, que en nuestra opinión se han logrado, se centraron, en primer lugar, en proponer una herramienta metodológica que permitiera reflexionar sobre el establecimiento de la agenda desde una perspectiva composicional; en un segundo lugar, desarrollamos la aplicación de esta metodología al servicio del estudio de la AS (en nuestro caso centrada en dos de las tres principales agendas: la agenda de medios y la política), infiriendo sobre un análisis proporcional entre emisores y temas; y, finalmente, una tercera línea que ha planteado la viabilidad de aplicar el mismo método en el estudio de intermediación de las agendas, consiguiendo ampliar el análisis entre emisores y temas a un marco más global, basado en las inferencias de un sector respecto el otro. Así, el presente apartado pretende discutir, de forma transversal, sobre las contribuciones más destacables que a lo largo del compendio de publicaciones se han alcanzado.

Comenzaremos por las contribuciones más sustanciales, destacando una de las principales aportaciones de la tesis: el estudio proporcional de los temas que conforman la AS en el contexto composicional del CoDa-biplot. En esta línea, resulta indispensable acentuar algunos de los principales resultados aportados en los artículos, especialmente en el segundo y tercero. En sendas publicaciones utilizamos el biplot de covarianza, donde el principal elemento de interpretación son las *distancias entre los extremos de los vectores*, para analizar la relación entre los temas que conforman la AS. Desde esta perspectiva, los vectores no solamente nos indican la importancia representativa del tema en la agenda y, por ende, el

efecto de encuadre en el proceso de establecimiento de la agenda (a través de la longitud del vector), sino que también constata que extremos de dos vectores próximos entre sí indican temas que guardan una alta proporcionalidad, y extremos alejados lo contrario. Por ejemplo, en el segundo artículo hemos visto como los temas *corrupción* y *regeneración y cambio* tienden a estar de forma conjunta en algunos rotativos y relativamente poco presentes en otros; en cambio, un tema como *politainment* tiende a estar muy presente cuando el *bloqueo institucional* lo está poco. Un escenario que podemos visualizar también en los dos biplot de covarianza de la agenda política de la tercera publicación, donde en sendas representaciones de campaña y post-campaña electoral encontramos temas como *pacts* y *Catalan Independence* altamente asociados para determinados partidos; al contrario del binomio *regeneration/change* y *politainment*, que aparecen claramente distanciados en ambos períodos.

En este sentido, las relaciones que se establecen entre los temas indican los contenidos que parecen estar más o menos estrechamente asociados entre ellos, así como con aquellos emisores más cercanos. De esta lectura del biplot de covarianza se constata la representación del efecto del *priming*, ya que si entendemos que cada vector (tema) es representado con énfasis variable por los diferentes remitentes, podemos mapear que ciertos problemas no solo se repiten globalmente, sino que también parecen estar asociados entre ellos e, incluso, con un/os emisor/es en particular. Esta representación la podemos identificar especialmente en el tercer artículo, donde los contenidos *corruption* y *regeneration/change* están estrechamente asociados. Pero más allá de cómo estos *issues* se repiten con más frecuencia que otros en los casos de Podemos y PSOE (es decir, AS en el sentido más puro del término), nos permite visualizar que dentro de un contexto de racionalidad su afiliación para cada tema los lleva a ambos a un efecto *priming*, descrito por la lógica de que cuanto más a menudo se

repite el contenido *corruption*, más a menudo aparece el tema *regeneration/change*. Los temas *pacts* y *Catalan Independence* son también ejemplos de este efecto, especialmente en relación con los partidos PP y Ciudadanos; así como los temas *politainment* y *unemployment*, nuevamente en relación con PP y Ciudadanos. Además, estos dos últimos ejemplos, que definen manifiestamente el efecto *priming* de los contenidos más recurrentes para PP y Ciudadanos, son a su vez los contenidos que en ambos casos denotan de manera opuesta este efecto para los partidos Podemos y PSOE.

La *spiral of silence* constituye el segundo de los efectos que el estudio y mapeo composicional de los temas de la AS ha logrado visualizar. Siguiendo con las representaciones de los biplots de covarianza sobre los periódicos y los partidos políticos, podemos señalar que el análisis dinámico de dos períodos de tiempo comparados (campaña y post-campaña electoral) y sobre unos mismos emisores (sean periódicos o partidos), ha permitido representar las dinámicas de presencia/ausencia u omisión/significación de los temas en la AS. Este ejercicio derivado de la jerarquización de los temas de la agenda, da como resultado un proceso de significación de ciertos asuntos a expensas de otros, que son relegados u omitidos. La primera figura de la tercera publicación es un ejemplo claro de este fenómeno, donde en el proceso de transición de un período a otro se construye un primer nivel de la *spiral of silence*, ya que pasamos de un primer período de campaña electoral donde predominan cuatro temas (*gender*, *unemployment*, *economy/crisis* y *corruption*) a un segundo período postelectoral caracterizado por cuatro temas totalmente diferentes (*pacts*, *new technology*, *election campaign* y *Catalan independence*). Este ejercicio de presencia/ausencia de determinados temas de la agenda según los emisores en estudio y los periodos de tiempo comparados, no solamente ha permitido representar la deriva de estos contenidos

según el contexto estudiado, sino que ha fundamentado, hasta donde alcanza nuestro saber, la primera representación del efecto de la *spiral of silence*.

En relación a los principales resultados del estudio proporcional de los emisores, conviene señalar también algunas aportaciones. Primeramente, es destacable la posibilidad de establecer un ordenamiento proporcional de los emisores en estudio sobre cada uno de los temas de la agenda, a partir de la proyección ortogonal de cada emisor sobre la dirección del contenido. Dicho en otras palabras, en el ejercicio de dejar caer los remitentes formando un ángulo de 90 grados sobre la dirección definida por el vector-tema de la agenda, hemos conseguido definir un estudio más detallado sobre cada *issue* de la agenda y con una mayor proporcionalidad en relación a cada emisor. Los biplot de forma/covarianza de las cuatro publicaciones con estudios composicionales de esta disertación son ejemplo de este proceso, pero de forma particular en el quinto artículo, y sirva como ejemplo, hemos podido constatar que el grupo RTVE, junto con Libertad Digital, fueron los emisores que más trataron el tema *crisis PSOE*, al contrario del propio PSOE, junto con IU, que fueron los emisores que menos trataron este tema en el contexto de la intermedia AS.

La posición relativa de cada emisor respecto a otro, así como en relación al centro del gráfico, constituye otro de los principales resultados de la tesis en el estudio composicional de los emisores de la AS. En el primer caso, y entendiendo que las distancias entre dos remitentes son aproximadamente proporcionales, aquellos emisores con composiciones de contenido similares aparecen muy juntos, a la vez que distantes de aquellos con quien no comparten la misma composición de temas. Asimismo, la ubicación de cada remitente en el biplot respecto al centro del gráfico, define el *nivel de proporcionalidad en el establecimiento de los temas*. Es decir, aquellos emisores que tratan pocos temas, pero con mucha frecuencia,

aparecen alejados del centro; a diferencia de aquellos que abordan un mayor número de temas, pero con menor frecuencia, que tienden a aparecer centrados en el biplot. Desde esta perspectiva, y sirviéndonos del cuarto artículo para su ejemplificación, podemos apreciar que el grupo de medios Unidad Editorial es aquel que guarda una mayor proporción sobre el conjunto de los temas, al contrario del grupo Godó, que aparece como el emisor que aborda con menor proporcionalidad la composición global de la agenda, es decir, determinados temas ocupan más espacio que otros. En suma, la posición relativa de cada grupo de medios en relación al centro, nos indica que de Unidad Editorial al Grupo Godó encontramos una escalada de desigualdad en el tratamiento de los temas de la AS.

Finalmente, cabe destacar la aportación del estudio en la visualización composicional del proceso de intermediación de las agendas. Las investigaciones bietápicas de tiempos comparados (campaña/post-campaña) de las publicaciones sobre la agenda de la prensa escrita (*Artículo II*), la agenda política (*Artículo III*) y la agenda de los grupos de medios (*Artículo IV*); así como la posibilidad de integrar un conjunto de emisores dentro de una supra-categoría que constituya un nuevo *emisor de emisores* (el caso de los medios que conforman grupos de medios en la cuarta publicación), han contribuido a representar las agendas de dos sectores (los medios y la política) en un mismo espacio. Este proceso no solamente posibilita el estudio de forma composicional la intermedia AS, sino que ha constatado que con los procesos de integración de emisores (lo que en CoDa se conoce como amalgama) podemos, la vez que estudiar individualmente cada emisor (p.ej., un programa, una cadena de radio/televisión, un periódico, un partido político), desarrollar un análisis sobre los puntos anteriormente dirimidos pero en el contexto de un emisor con categoría superior (en nuestro estudio, los grupos de medios).

6. CONCLUSÕES GERAIS

Esta última secção sistematiza as principais conclusões apresentadas nas cinco publicações. Por se tratar de um compêndio de artigos com unidade temática, as conclusões articulam-se de forma transversal para os cinco trabalhos, especialmente enfáticos nos quatro que estudam, desenvolvem e representam a teoria da AS através da ferramenta CoDa. Esta secção conclui-se com uma conclusão sobre as linhas de estudo mais destacáveis para futuras investigações e uma significação critica sobre as principais limitações do estudo.

Se esta tese se deve condensar numa "síntese", ou numa conclusão geral, esta baseia-se na aplicação da ferramenta composicional do CoDa-biplot à abordagem tradicional da análise de categorias de conteúdo nos MMC, a qual permitiu visualizar, de maneira intuitiva, a teoria da AS, assim como facilitar um método de estudo com maior significado no fator proporcional, o que permite superar os vazios metodológicos dos procedimentos baseados em correlações, intervalos, frequências ou contraste χ^2.

Definitivamente, esta tese, até onde alcança o nosso saber, constitui a primeira evidência empírica do estudo composicional da teoria da AS e o seu mapeamento através do CoDa-biplot.

Os resultados do primeiro artigo contribuíram para a delineação de um contexto de estudo sobre a teoria da AS, o qual permitiu apreender os temas sobre política que suscitaram uma maior atenção no quadro do estudo. Esta análise básica da AS da primeira publicação, significou o principal argumento desta dissertação em relação ao estudo dos processos metodológicos da teoria da AS, dando lugar ao segundo artigo, e com ele, as conclusões mais destacáveis do ponto de vista da significação da ferramenta CoDa-biplot no campo em estudo.

Assim, no segundo artigo, desenvolvemos e constatamos a viabilidade da ferramenta na sua aplicação ao universo estudado na primeira publicação, servindo-se do CoDa-biplot no estudo da AS e revelando, em contraposição com a primeira publicação da tese, não somente a viabilidade da ferramenta composicional, mas também o contributo para o estudo proporcional das categorias observadas. Mas não só, também nos permitiu centrar a análise na importância relativa de cada tipo de conteúdo para ver que partes enfatizam que conteúdos; que partes são similares ou diferentes entre si; que partes do conteúdo são tratadas de maneira similar o diferente *(priming)* e que conteúdos tendem a ser omitidos *(spiral of silence).*

O terceiro e quarto artigos são exemplo da aplicação do método composicional ao estudo da AS. Concretamente, o terceiro artigo constitui a primeira representação composicional da agenda política, contribuindo para uma visualização intuitiva das agendas dos partidos políticos através do estudo das suas contas oficiais do Twitter. Da mesma forma, e em relação ao quarto artigo, o enfoque sobre a importância relativa de cada tipo de conteúdo para visualizar que partes do todo fazem enfâse em que conteúdos, o que permitiu estudar e mapear a agenda dos media tradicionais de forma agregada, através dos principais grupos de media em Espanha.

O quinto artigo prova a viabilidade do enfoque composicional no estudo e visualização da intermedia AS das agendas dos medias e da política, dentro do contexto eleitoral abordado como estudo de caso para a dissertação. O estudo prova também as vantagens de observar de forma composicional os processos de intermediação das agendas de distintos atores, quando a finalidade reside em situar cada emissor no contexto de uma composição de conteúdos proporcionais, visualizando, por sua vez, as inter-relações entre os demais atores que definem a

disposição da agenda. Por outro lado, a análise comparada das agendas constatou a possibilidade de comparar os atores segundo a sua natureza, contribuindo assim para um exercício de análise primário entre iguais que, posteriormente, num segundo nível de estudo, se complementa com a natureza de cada emissor dentro do universo observado. Também cabe aqui destacar o contributo do método na sua fase dinâmica sobre períodos de tempo comparados, possibilitando a identificação da quantidade e conteúdo de temas que marcam a agenda em cada ciclo, assim como as disposições dos emissores e, portanto, o efeito do enquadramento sobre as agendas que estes representam.

Este mesmo método –desde as possibilidades futuras de estudo na teoria da AS e, de forma global, no campo das ciências da comunicação– demonstrou ser também altamente recomendável para paradigmas de recompilação de dados baseados na exploração de textos, assim como para visualizar processos de análise de conteúdos derivados dos estudos dos medias. Uma pergunta de investigação típica nos estudos sobre os efeitos dos MMC na opinião pública é "se existe uma relação dinâmica entre os conteúdos dos MMC e os conteúdos da esfera política?" Neste sentido, os modelos dinâmicos composicionais, como os modelos autorregressivos vectoriais (p.ex., Barceló-Vidal et al., 2011; Kynčlová et al., 2015; Morais et al., 2017), podem utilizar-se para avaliar a significação estatística dos efeitos retardados de uma composição (por exemplo, publicar conteúdos por parte dos MMC) sobre outra (por exemplo, publicar conteúdos por parte dos partidos políticos no Twitter). Os efeitos também se podem avaliar em ambas as direções para realizar provas composicionais de causalidade de Granger, no que os teóricos da AS conceberam como exercício de intermediação das agendas dos diferentes atores em estudo (agenda de medias, agenda pública e/ou agenda política). Podemos ainda destacar a possibilidade de aplicar o método para

relacionar a proeminência dos temas nos medias e no público, de acordo com a Tipologia de Acapulco (McCombs, 2004).

Para concluir, cabe destacar uma limitação comumente mencionada do CoDa, já que não é um método apropriado para tabelas de dados com predominância de zeros. Como assinalámos, na secção metodológica, existem métodos para a substituição destes zeros (Martín-Fernandez et al., 2015b), quando o seu número é reduzido. No entanto, cabe dizer que podemos minimizar esta limitação desenvolvendo estudos da AS com um volume de dados mais elevados cobrindo um maior número de conteúdos (p.ex., artigos de imprensa, programas de rádio/televisão, tweets, etc.). Também podemos minimizar os seus efeitos com um processo bietápico de codificação/categorização dos temas, que permita a inclusão de vários subtemas (códigos), dentro de um tema mais amplo (categoria), o que na terminologia CoDa se identifica como amálgama. Da mesma forma, e para estudos de intermedia AS ampliando-se o espectro de emissores, também se podem misturar grupos *media* ou partidos em coligações que se explicam sob determinadas premissas (por exemplo, partidos de direita/esquerda, grupos *media* públicos ou privados, etc.). Finalmente, cabe prestar atenção aos espaços dinâmicos de representação que, como vimos nos artigos, podem supor a proliferação de zeros quando há temas que num determinado âmbito temporal deixam de ser tratados por completo. No nosso caso, e como primeira solução, propomos reduzir o grupo de temas (eliminando aqueles vinculados a um único período), mas, também, podemos superar esta limitação construindo a agenda com temas representativos em ambos os períodos de estudo.

REFERENCIAS

Aitchison, J. (1982). The statistical analysis of compositional data. *Journal of the Royal Statistical Society. Series B (Methodological)*, 44(2), 139–177.

Aitchison, J. (1983). Principal component analysis of compositional data. *Biometrika*, 70(1), 57–65.

Aitchison, J. (1986). The statistical analysis of compositional data. *Monographs on Statistics and Applied Probability*. Chapman and Hall: London.

Aitchison, J., Barceló-Vidal, C., Martín-Fernández, J.A., Pawlowsky-Glahn, V. (2000). Logratio analysis and compositional distances. *Mathematical Geology,* 32(3), 271-275.

Aitchison, J., Greenacre, M. (2002). Biplots of compositional data. *Journal of the Royal Statistical Society: Series C (Applied Statistics)*, 51(4), 375-392.

Barceló-Vidal, C., Aguilar, L., Martín-Fernández, J.A. (2011). Compositional VARIMA time series. En V. Pawlowsky-Glahn, A. Buccianti (Eds.) *Compositional Data Analysis: Theory and Applications* (pp. 87-103). Wiley: Chichester.

Batista-Foguet, J.M., Ferrer-Rosell, B., Serlavós, R., Coenders, G., Boyatzis, R.E. (2015). An alternative approach to analyze ipsative data. Revisiting Experiential Learning Theory. *Frontiers in Psychology*, 6, 1742.

Berelson, B., Lazarsfeld, P., McPhee, W. (1954). *Voting. A study of opinion formation in a presidential campaign*. University of Chicago Press: Chicago.

Besova, A.A., Cooley, S.C. (2009). Foreign News and Public Opinion: Attribute Agenda-Setting Theory Revisited. *Ecquid Novi: African Journalism Studies*, 30(2), 219-242, DOI: 10.1080/02560054.2009.9653403

Bruder, K. (2008). *AgendaSetting of International News in the United States and Its Decline by Using New Technologies*. Communication Senior Seminar. Alma College: California.

Buccianti, A., Mateu-Figueras, G., Pawlowsky-Glahn, V. (2006). *Compositional Data Analysis in the Geosciences: From Theory to Practice*. Geological Society: London.

Cohen, B. (1963). *The press and foreign policy*. Princenton University Press: New York.

Conway, B.A., Kenski, K., Wang, D. (2015). The rise of Twitter in the political campaign: Searching for intermedia agenda-setting effects in the presidential primary. *Journal of Computer-Mediated Communication*, 20(4), 363-380.

Cui, D., Wu, F. (2017). Inter-media agenda setting in global news production: examining agenda attributes in newspaper coverage of the MH370 incident in the U.S., China, and Hong Kong. *Asian Journal of Communication*, DOI: 10.1080/01292986.2017.1305426

Dearing, J., Rogers, E. (1996). *Agenda Setting*. Sage Publications: Thousand Oaks.

Egozcue, J.J., Pawlowsky-Glahn, V., Mateu-Figueras, G., Barceló-Vidal, C. (2003). Isometric logratio transformations for compositional data analysis. *Mathematical Geology*, 35(3), 279–300.

Egozcue, J.J., Pawlowsky-Glahn, V. (2011). Basic concepts and procedures. En V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications* (pp. 13-28). Wiley: New York.

Eijnatten, F.M., Van der Ark, L.A., Holloway, S.S. (2015). Ipsative measurement and the analysis of organizational values: an alternative approach for data analysis. *Quality & Quantity*, 49(2), 559-579.

Ferrer-Rosell, B., Coenders, G. (2016). Destinations and crisis. Profiling tourists' budget share from 2006 to 2012. *Journal of Destination Marketing & Management*, DOI: 10.1016/j.jdmm.2016.07.002

Frederick, E.L., Burch, L.M. Blaszka, M. (2015). A shift in set: examining the presence of agenda setting on twitter during the 2012 London Olympics. *Communication & Sport*, 3(3), 312-333.

Fry, T. (2011). Applications in economics. En V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications:* 318-326. Wiley: New York.

Gabriel, K.R. (1971). The biplot-graphic display of matrices with application to principal component analysis. *Biometrika*, 58(3), 453-467.

Gonzenbach, W., McGavin, L. (1997). *A brief story of time: A methodological analysis of agenda setting*. En McCombs, M., Shaw, D. y Weaver, D. (Eds.), *Communication and Democracy: Exploring the intellectual Frontiers in Agenda-setting theory*, (pp. 115-136). Lawrence Erlbaum Associates: EEUU.

Greenacre, M. (2011). Compositional data and correspondence analysis. En V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications* (pp. 104-113). Wiley: New York.

Guo, L., Chen, Y.K., Vu, H., Wang, Q., Aksamit, R., Guzek, D., Jachimowski, M., McCombs, M. (2015). Coverage of the Iraq War in the United States, Mainland China, Taiwan and Poland. *Journalism Studies*, 16(3), 343-362, DOI: 10.1080/1461670X.2014.885198

Igartua, J.J., Humanes, M.L. (Eds.) (2004). *Teoría e investigación en comunicación social*. Síntesis: Madrid.

Jungherr, A., Schoen, H., Jürgens, P. (2016). The mediation of politics through Twitter: An analysis of messages posted during the campaign for the German federal election 2013. *Journal of Computer-Mediated Communication*, 21(1), 50-68.

Kynčlová, P., Filzmoser, P., Hron, K. (2015). Modeling compositional time series with vector autoregressive models. *Journal of Forecasting*, 34(4), 303-314.

Klapper, J. (1957). What we know about the effects of mass communication: The brink of hope. *Public Opinion Quarterly*, 22(5), 453-474.

Klapper, J. (1960). *The Effects of Mass Communication*. Free Press: New York.

Kogovšek, T., Coenders, G., Hlebec, V. (2013). Predictors and outcomes of social network compositions. A compositional structural equation modeling approach. *Social Networks*, 35(1), 1-10.

Krane, M. (2010). *The Socially Filtered Media Agenda: a Study of Agenda Setting among News Outlets on Twitter*. University of Missouri: Columbia.

Krippendorff, K. (2004). *Content Analysis: An introduction to its methodology.* Sage: Thousands Oaks.

Lang, G. and Lang, K. E. (1966). The Mass Media and Voting. En B. Berelson, M. Janowitz (Eds.), *Reader in Public Opinion and Communication* (pp. 455-472). Free Press: New York.

Lasswell, H.D. (1927). *Propaganda Techniques in the World War*. Knopf Press: London.

Lazarsfeld, P., Berelson, B., Gaudet, H. (1944). *The People's Choice. How the Voter Makes Up His Mind in the Presidential Campaign*. Columbia University Press: New York.

Lim, J. (2011). First-level and second-level intermedia agenda-setting among major news websites. *Asian Journal of Communication*, 21(2), 167-185, DOI: 10.1080/01292986.2010.539300

Linares-Mustarós, S., Coenders, G., Vives-Mestres, M. (2018). Financial performance and distress profiles. From classification according to financial ratios to compositional classification. *Advances in Accounting*, DOI: 10.1016/j.adiac.2017.10.003

Lippmann, W. (1922). Public Opinion. Macmillan: New York.

Liscano Fierro, J.M., Ortiz Rico, F.A. (2017). *Modelos mixtos para datos composicionales: Una aplicación con resultados electorales en Colombia*. Universidad Santo Tomás: Bogotá.

López García, G. (2004). *Comunicación electoral y formación de la opinión pública: las elecciones generales de 2000 en la prensa española.* Servei de Publicacions de la Universitat de Valencia: Valencia.

Luhmann, N. (1973). *Ilustración sociológica y otros ensayos*. Editorial Sur: Buenos Aires.

Luo, Y. (2014). The Internet and agenda setting in China: The influence of online public opinion on media coverage and government policy. *International Journal of Communication*, 8, 1289–1312.

Martín-Fernández, J.A. Barceló-Vidal, C., Pawlowsky-Glahn, V. (2003). Dealing with zeros and missing values in compositional data sets using non-parametric imputation. *Mathematical Geology*, 35(3), 253–278.

Martín-Fernández, J.A., Palarea-Albaladejo, J., Olea, R.A. (2011). Dealing with zeros. En V. Pawlowsky-Glahn, A. Buccianti (Eds.), *Compositional Data Analysis. Theory and Applications* (pp. 47-62). Wiley: New York.

Martín-Fernández, J.A., Daunis-i-Estadella, J., Mateu-Figueras, G. (2015a). On the interpretation of differences between groups for compositional data. *SORT-Statistics and Operations Research Transactions*, 39(2), 231-252.

Martín-Fernández, J.A., Hron, K., Templ, M., Filzmoser, P., Palarea-Albaladejo, J. (2015b). Bayesian-multiplicative treatment of count zeros in compositional data sets. *Statistical Modelling*, 15(2), 134-158.

McCombs, M., Shaw, D.L. (1972) The agenda-setting function of mass media. *Public Opinion Quarterly*, 36(2), 176–187.

McCombs, M. (2004). *Setting the Agenda.* Polity Press: Cambridge.

McCombs, M. (2006). *Estableciendo la agenda*. Paidós Comunicación: Barcelona.

Meraz, S. (2009). Is There an Elite Hold? Traditional Media to Social Media Agenda Setting Influence in Blog Networks. *Journal of Computer Mediated Communication*, 14, 682–707.

Min, Y. (2004). Campaign agenda formation: The news media in the Korean congressional election of 2000. *Asian Journal of Communication*, 14(2), 192-204, DOI:10.1080/0129298042000256767

Morais, J., Thomas-Agnan, C., Simioni, M. (2017). Interpreting the impact of explanatory variables in compositional models. *Toulouse School of Economics Working Papers*, 17(805), 1-26.

Naudé, A.M.E., Froneman, J.D. (2003). Trends in news agenda setting by the Sunday Times and Rapport in 2000. *Ecquid Novi: African Journalism Studies*, 24(1), 84-98, DOI: 10.1080/02560054.2003.9653262

Orihuela, J.L. (2008). Internet: la hora de las redes sociales. *Nueva Revista de Política, Cultura y Arte*, 119, 57-62.

Palarea-Albaladejo, J., Martín-Fernández, J.A. (2015). zCompositions—R package for multivariate imputation of left-censored data under a compositional approach. *Chemometrics and Intelligent Laboratory Systems*, 143, 85-96.

Parmelee, J.H. (2013). Political journalists and Twitter: Influences on norms and practices. *Journal of Media Practice*, 14, 291–305.

Pawlowsky-Glahn, V., Buccianti, A. (2011). *Compositional Data Analysis. Theory and Applications*. Wiley: New York.

Pawlowsky-Glahn, V., Egozcue, J.J., Tolosana-Delgado, R. (2015). *Modeling and Analysis of Compositional Data*. Wiley: Chichester.

Perlmutter, D.D. (2008). Political blogging and campaign 2008: A roundtable. *The International Journal of Press/Politics*, 13, 160–170.

Pierotti, M.E.R., Martín-Fernández, J.A., Seehausen, O. (2009). Mapping individual variation in male mating preference space: multiple choice in a colour polymorphic cichlid fish. *Evolution*, 63(9), 2372-2388.

Ragas, M.W., Kiousis, S. (2010). Intermedia agenda-setting and political activism: MoveOn.org and the 2008 presidential election. *Mass Communication and Society,* 13(5), 560-583, DOI: 10.1080/15205436.2010.515372

Rogstad, I. (2016). Is Twitter just rehashing? Intermedia agenda setting between Twitter and mainstream media. *Journal of Information Technology & Politics*, 13(2), 142-158, DOI: 10.1080/19331681.2016.1160263

Rubio-García, R. (2014). Twitter y la teoría de la Agenda-Setting: mensajes de la opinión pública digital *Estudios Sobre el Mensaje Periodístico*, 20(1), 249-265.

Russell, M.A. (2014). *Mining the Social Web: Data Mining Facebook, Twitter, LinkedIn, Google+, GitHub, and More*. O'Reilly: Sebastopol.

Sádaba, T. (2008). *Framing: el Encuadre de las Noticias. El Binomio Terrorismo-Medios*. La Crujía Ediciones: Buenos Aires.

Shaw, D.L., McCombs, M.F. (1977). *The Emergence of American Political Issues. The Agenda Setting Function of the Press*. West Publishing Company: St. Paul.

Sweetser, K.D., Golan, G.J., Wanta, W. (2008). Intermedia Agenda Setting in Television, Advertising, and Blogs During the 2004 Election. *Mass Communication and Society*, 11(2), 197-216, DOI: 10.1080/15205430701590267

Tedesco, J.C. (2005). Issue and Strategy Agenda Setting in the 2004 Presidential Election: exploring the candidate–journalist relationship. *Journalism Studies*, 6(2), 187-201, DOI: 10.1080/14616700500057270

Thió-Henestrosa, S., Martín-Fernández, J.A. (2005). Dealing with compositional data: The freeware CoDaPack. *Mathematical Geology*, 37(7), 773-793.

Towner, T.L., Dulio, D. A. (2012). New media and political marketing in the United States: 2012 and beyond. *Journal of Political Marketing*, 11, 95–119.

Van den Boogaart, K.G., Tolosana-Delgado, R. (2013). *Analyzing Compositional Data with R*. Springer: Berlin.

Vives-Mestres, M., Martín-Fernández, J.A., Kenett, R. (2016). Compositional data methods in customer survey analysis. *Quality and Reliability Engineering International*, 32(6), 2115–2125.

Weimann-Saks, D., Ariel, Y., Malka, V., Avidar, R. (2016). Trends in public and media agenda-setting during the 2015 Israeli elections. *Israel Affairs*, 22(3-4), 727-742, DOI: 10.1080/13537121.2016.1174386

Wimmer, R.D., Dominick, J.R. (2006). *Mass Media Research: an introduction*. Thomson Wadsworth: USA.

Wolf, M. (1991). *La investigación de la comunicación de masas*. Paidós: Buenos Aires.

Brosandi
Hendumst í hringi
Höldumst í hendur
Allur heimurinn óskýr
Nema þú stendur

Hoppípolla, Sigur Rós.