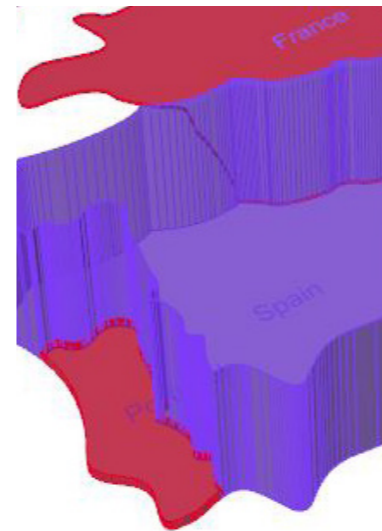Designing Associativity

**Exercise 1** Wind Energy Capacity in the EU, where should we focus?

Philip Serif, Giuseppe Di Domenico, Diego Ramirez

www.projectlinework.org

HOME

Project Linework

A library of handcrafted vector linework for cartography,
each designed in a unique aesthetic style. They are meant
to break us away from default line paths that we so often
rely on by providing more visually-interesting alternatives.

Using the website 'projectlinework.org' we were able to download vector linework for Europe. We had to eliminate some double lines, e.g perimeter line around Europe.

Choose...
curve
curve
curve
None

Statistics [edit]
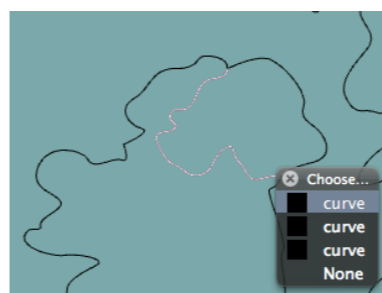
Installed wind power capacity [edit]

Taking the data for the wind capacity in europe between the years of 2013 and 1998, we transferred it over to excel.
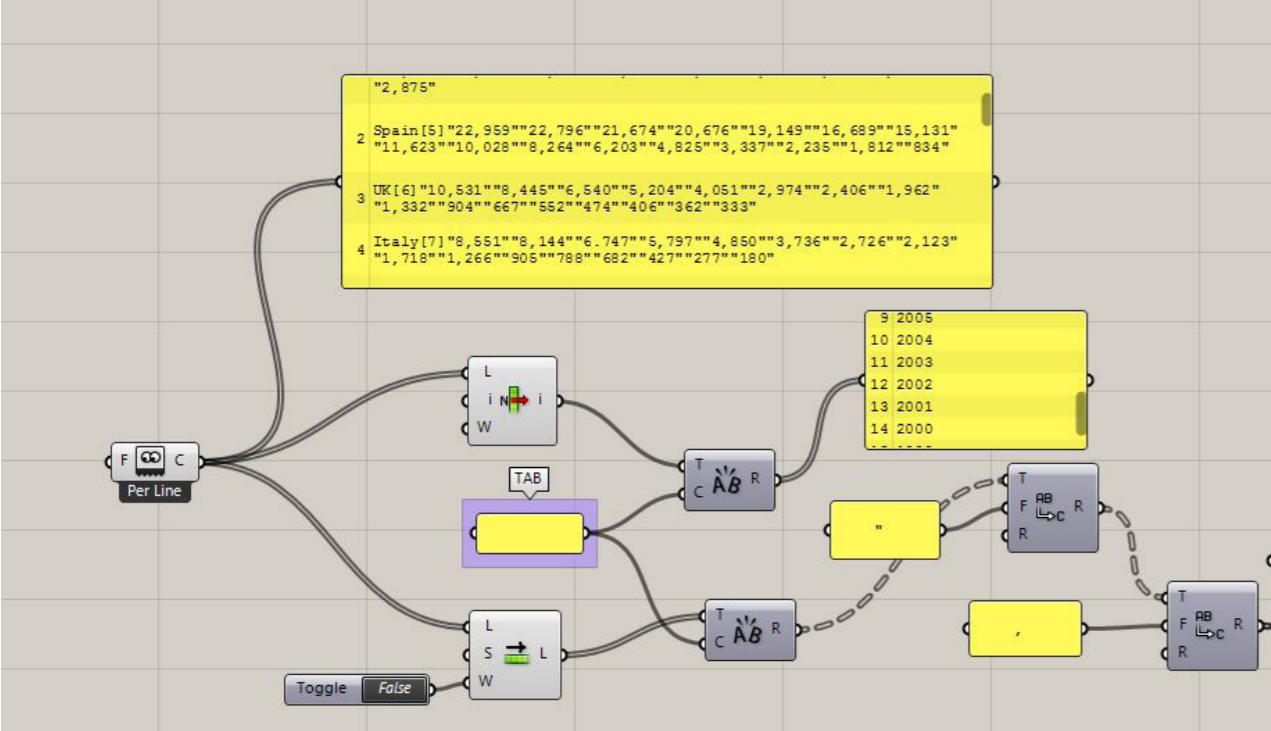
No	Country	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998
-	EU-28	117,289	105,696	93,957	84,074	74,767	64,712	56,517	48,069	40,511	34,383	28,599	23,159	17,315	12,887	9,678	6,453
1	Germany	33,730	31,332	29,060	27,214	25,777	23,897	22,247	20,622	18,415	16,629	14,609	11,994	8,754	6,113	4,442	2,875
2	Spain	22,959	22,796	21,674	20,676	19,149	16,689	15,131	11,623	10,028	8,264	6,203	4,825	3,337	2,235	1,812	834
3	UK	10,531	8,445	6,540	5,204	4,051	2,974	2,406	1,962	1,332	904	667	552	474	406	362	333
4	Italy	8,551	8,144	6,747	5,797	4,850	3,736	2,726	2,123	1,718	1,266	905	788	682	427	277	180
5	France	8,254	7,196	6,800	5,660	4,492	3,404	2,454	1,567	757	390	257	148	93	66	25	19
6	Denmark	4,772	4,162	3,871	3,752	3,465	3,163	3,125	3,136	3,128	3,118	3,116	2,889	2,489	2,417	1,771	1,443
7	Portugal	4,724	4,525	4,083	3,898	3,535	2,862	2,150	1,716	1,022	522	296	195	131	100	61	60
8	Sweden	4,470	3,745	2,907	2,163	1,560	1,048	788	571	509	442	399	345	293	231	220	174
9	Poland	3,390	2,497	1,616	1,107	725	544	276	153	83	63	63	27	0	0	0	0
10	Netherlands	2,693	2,391	2,328	2,245	2,229	2,225	1,747	1,558	1,219	1,079	910	693	486	446	433	361
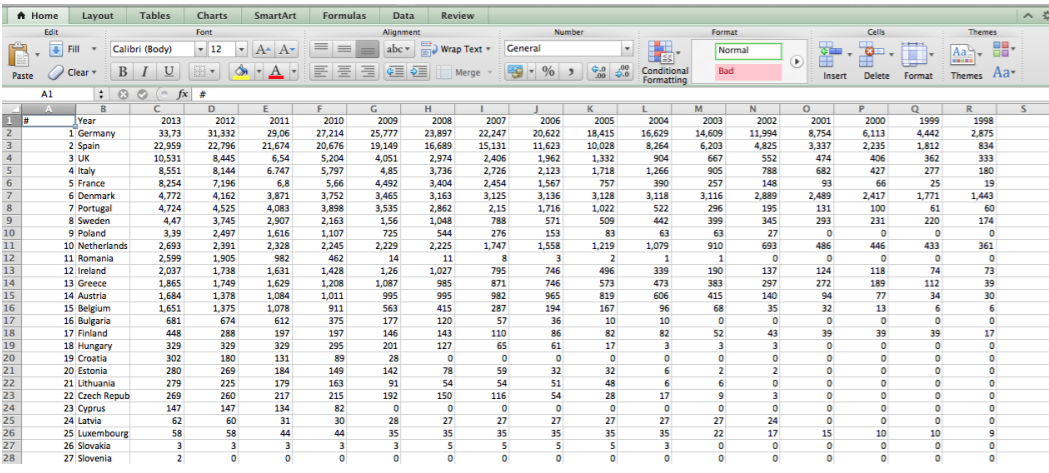
Makiing some corrections to falsely copied rows or syntax in excel.

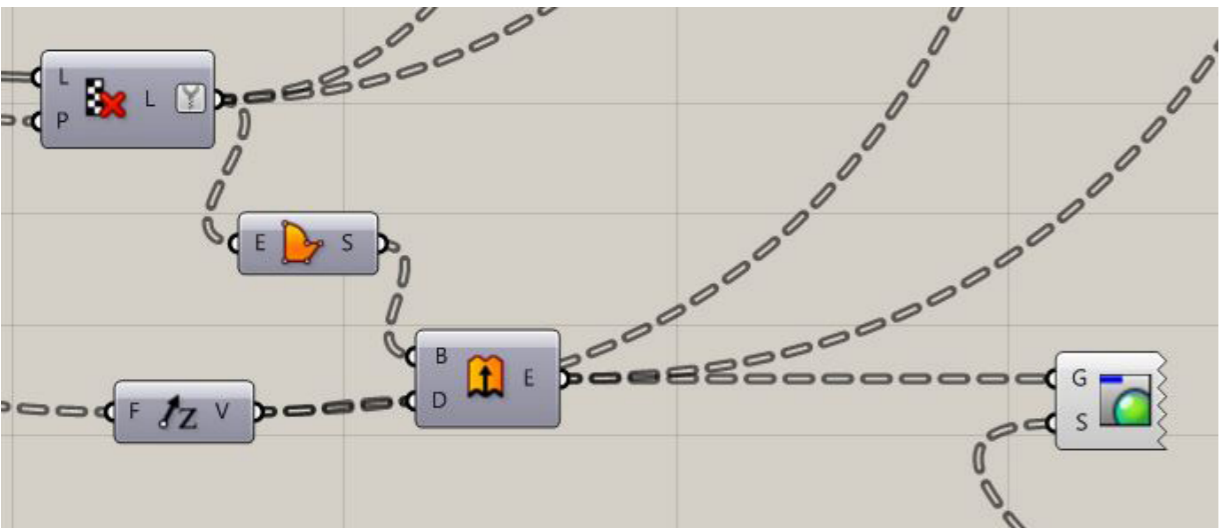| #	Year	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998
1	Germany	33,73	31,332	29,06	27,214	25,777	23,897	22,247	20,622	18,415	16,629	14,609	11,994	8,754	6,113	4,442	2,875
2	Spain	22,959	22,796	21,674	20,676	19,149	16,689	15,131	11,623	10,028	8,264	6,203	4,825	3,337	2,235	1,812	834
3	UK	10,531	8,445	6,54	5,204	4,051	2,974	2,406	1,962	1,332	904	667	552	474	406	362	333
4	Italy	8,551	8,144	6,747	5,797	4,85	3,736	2,726	2,123	1,718	1,266	905	788	682	427	277	180
5	France	8,254	7,196	6,8	5,66	4,492	3,404	2,454	1,567	757	390	257	148	93	66	25	19
6	Denmark	4,772	4,162	3,871	3,752	3,465	3,163	3,125	3,136	3,128	3,118	3,116	2,889	2,489	2,417	1,771	1,443
7	Portugal	4,724	4,525	4,083	3,898	3,535	2,862	2,15	1,716	1,022	522	296	195	131	100	61	60
8	Sweden	4,47	3,745	2,907	2,163	1,56	1,048	788	571	509	442	399	345	293	231	220	174
9	Poland	3,39	2,497	1,616	1,107	725	544	276	153	83	63	63	27	0	0	0	0
10	Netherlands	2,693	2,391	2,328	2,245	2,229	2,225	1,747	1,558	1,219	1,079	910	693	486	446	433	361
11	Romania	2,599	1,905	982	462	14	11	8	3	2	1	1	1	0	0	0	0
12	Ireland	2,037	1,738	1,631	1,428	1,26	1,027	795	746	496	339	190	137	124	118	74	73
13	Greece	1,865	1,749	1,629	1,208	1,087	985	871	746	573	473	383	297	272	189	112	39
14	Austria	1,684	1,378	1,084	1,011	995	995	982	965	819	606	415	140	94	77	34	30
15	Belgium	1,651	1,375	1,078	911	563	415	287	194	167	96	68	35	32	13	6	6
16	Bulgaria	681	674	612	375	177	120	57	36	10	10	0	0	0	0	0	0
17	Finland	448	288	197	197	146	143	110	86	82	82	52	43	39	39	39	17
18	Hungary	329	329	329	295	201	127	65	61	17	3	3	3	0	0	0	0
19	Croatia	302	180	131	89	28	0	0	0	0	0	0	0	0	0	0	0
20	Estonia	280	269	184	149	142	78	59	32	32	6	2	2	0	0	0	0
21	Lithuania	279	225	179	163	91	54	54	51	48	6	6	0	0	0	0	0
22	Czech Repub	269	260	217	215	192	150	116	54	28	17	9	3	0	0	0	0
23	Cyprus	147	147	134	82	0	0	0	0	0	0	0	0	0	0	0	0
24	Latvia	62	60	31	30	28	27	27	27	27	27	24	0	0	0	0	0
25	Luxembourg	58	58	44	44	35	35	35	35	35	35	22	17	15	10	10	9
26	Slovakia	3	3	3	3	3	5	5	5	5	5	3	0	0	0	0	0
27	Slovenia	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

We then took the data over to a simple text edit window and proceeded to set it up properly for the definition on grasshopper.

#	Year	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998
1	Germany	33,73	31,332	29,06	27,214	25,777	23,897	22,247	20,622	18,415	16,629	14,609	11,994	8,754	6,113	4,442	2,875
2	Spain	22,959	22,796	21,674	20,676	19,149	16,689	15,131	11,623	10,028	8,264	6,203	4,825	3,337	2,235	1,812	834
3	UK	10,531	8,445	6,54	5,204	4,051	2,974	2,406	1,962	1,332	904	667	552	474	406	362	333
4	Italy	8,551	8,144	6,747	5,797	4,85	3,736	2,726	2,123	1,718	1,266	905	788	682	427	277	180
5	France	8,254	7,196	6,8	5,66	4,492	3,404	2,454	1,567	757	390	257	148	93	66	25	19
6	Denmark	4,772	4,162	3,871	3,752	3,465	3,163	3,125	3,136	3,128	3,118	3,116	2,889	2,489	2,417	1,771	1,443
7	Portugal	4,724	4,525	4,083	3,898	3,535	2,862	2,15	1,716	1,022	522	296	195	131	100	61	60
8	Sweden	4,47	3,745	2,907	2,163	1,56	1,048	788	571	509	442	399	345	293	231	220	174
9	Poland	3,39	2,497	1,616	1,107	725	544	276	153	83	63	63	27	0	0	0	0
10	Netherlands	2,693	2,391	2,328	2,245	2,229	2,225	1,747	1,558	1,219	1,079	910	693	486	446	433	361
11	Romania	2,599	1,905	982	462	14	11	8	3	2	1	1	1	0	0	0	0
12	Ireland	2,037	1,738	1,631	1,428	1,26	1,027	795	746	496	339	190	137	124	118	74	73
13	Greece	1,865	1,749	1,629	1,208	1,087	985	871	746	573	473	383	297	272	189	112	39
14	Austria	1,684	1,378	1,084	1,011	995	995	982	965	819	606	415	140	94	77	34	30
15	Belgium	1,651	1,375	1,078	911	563	415	287	194	167	96	68	35	32	13	6	6
16	Bulgaria	681	674	612	375	177	120	57	36	10	10	0	0	0	0	0	0
17	Finland	448	288	197	197	146	143	110	86	82	82	52	43	39	39	39	17
18	Hungary	329	329	329	295	201	127	65	61	17	3	3	3	0	0	0	0
19	Croatia	302	180	131	89	28	0	0	0	0	0	0	0	0	0	0	0
20	Estonia	280	269	184	149	142	78	59	32	32	6	2	2	0	0	0	0
21	Lithuania	279	225	179	163	91	54	54	51	48	6	6	0	0	0	0	0
22	Czech Republic	269	260	217	215	192	150	116	54	28	17	9	3	0	0	0	0
23	Cyprus	147	147	134	82	0	0	0	0	0	0	0	0	0	0	0	0
24	Latvia	62	60	31	30	28	27	27	27	27	27	24	0	0	0	0	0
25	Luxembourg	58	58	44	44	35	35	35	35	35	35	22	17	15	10	10	9
26	Slovakia	3	3	3	3	3	5	5	5	5	5	3	0	0	0	0	0
27	Slovenia	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

"2,875"

2 Spain[5]"22,959""22,796""21,674""20,676""19,149""16,689""15,131"
"11,623""10,028""8,264""6,203""4,825""3,337""2,235""1,812""834"

3 UK[6]"10,531""8,445""6,540""5,204""4,051""2,974""2,406""1,962"
"1,332""904""667""552""474""406""362""333"

4 Italy[7]"8,551""8,144""6.747""5,797""4,850""3,736""2,726""2,123"
"1,718""1,266""905""788""682""427""277""180"

Organising data in grasshopper using 'list item' and 'text split'.

Seperating data from the data list using the referenced curves on the map and 'list item'.

Extruding values using 'z' vector and 'extrude' components.
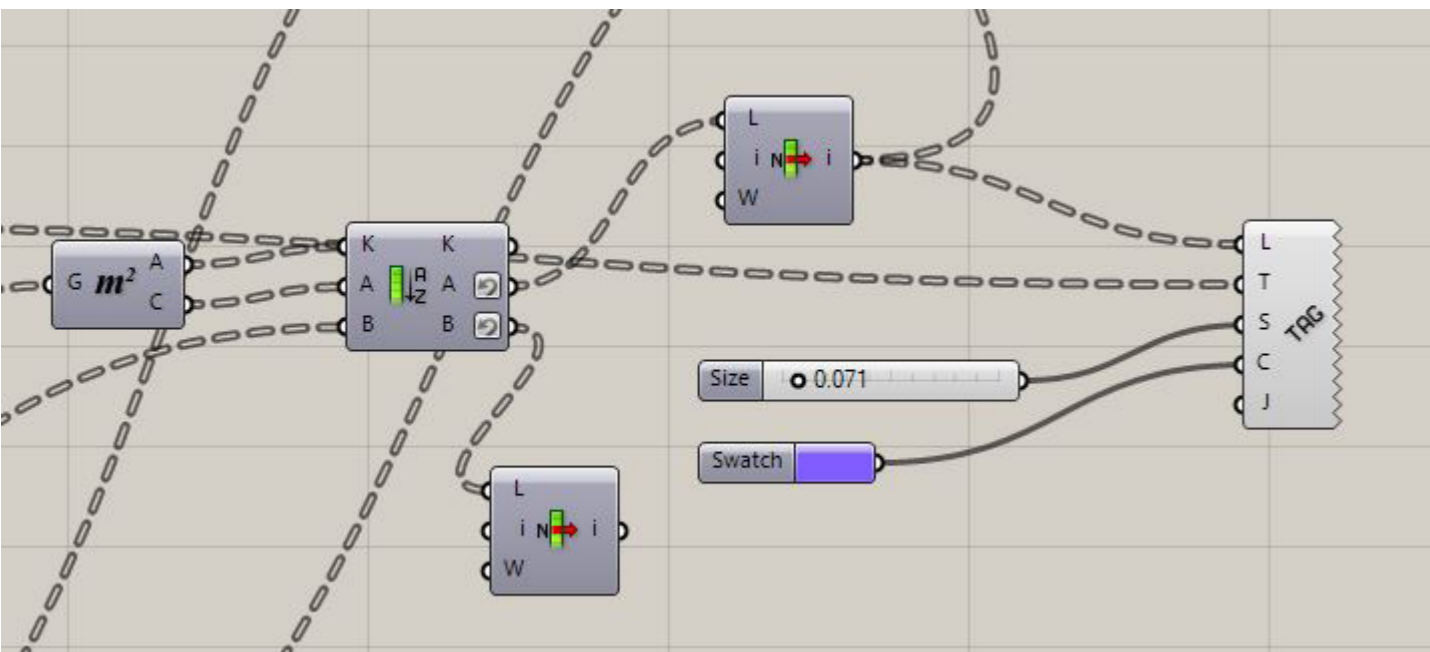
Locating tags and placing them in the respective country using 'text tag' component.
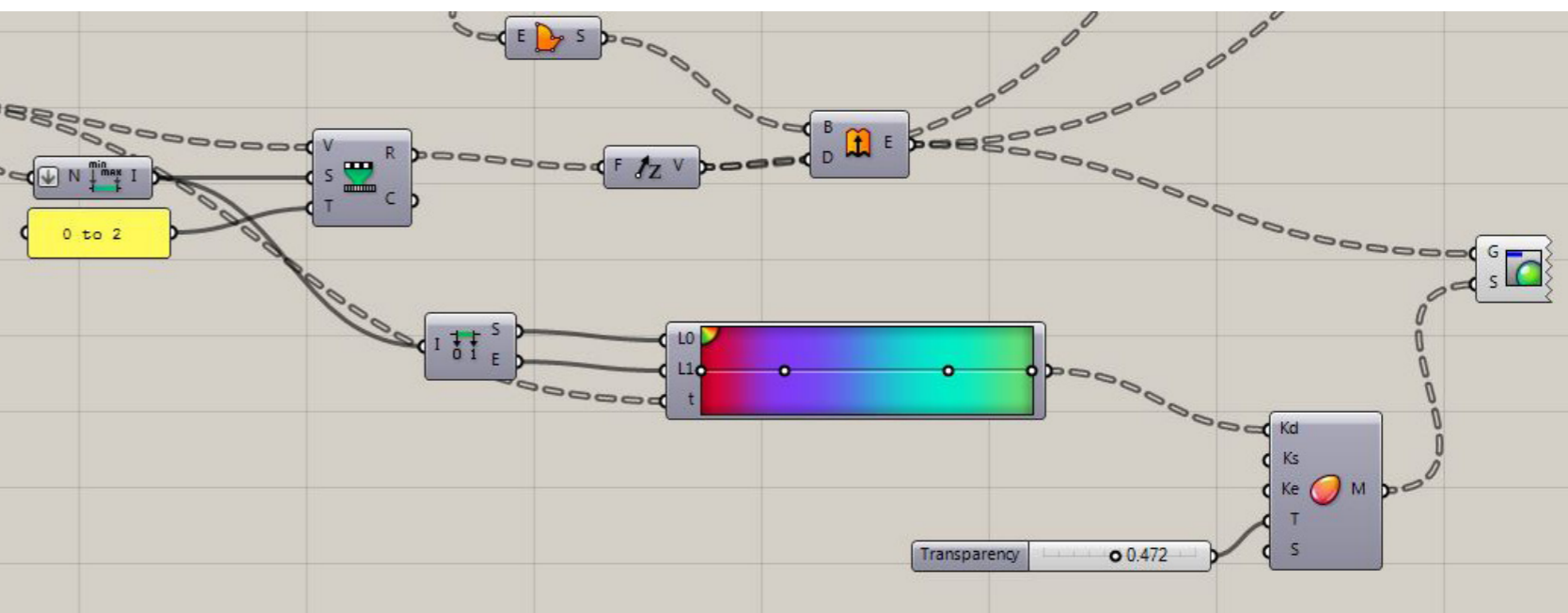
Giving colour to the extrusions with 'gradient' and 'new material' components.

1998 1999 2000

2001 2002 2003

2004 2005 2006

2007 2008 2009

2010 2011 2012
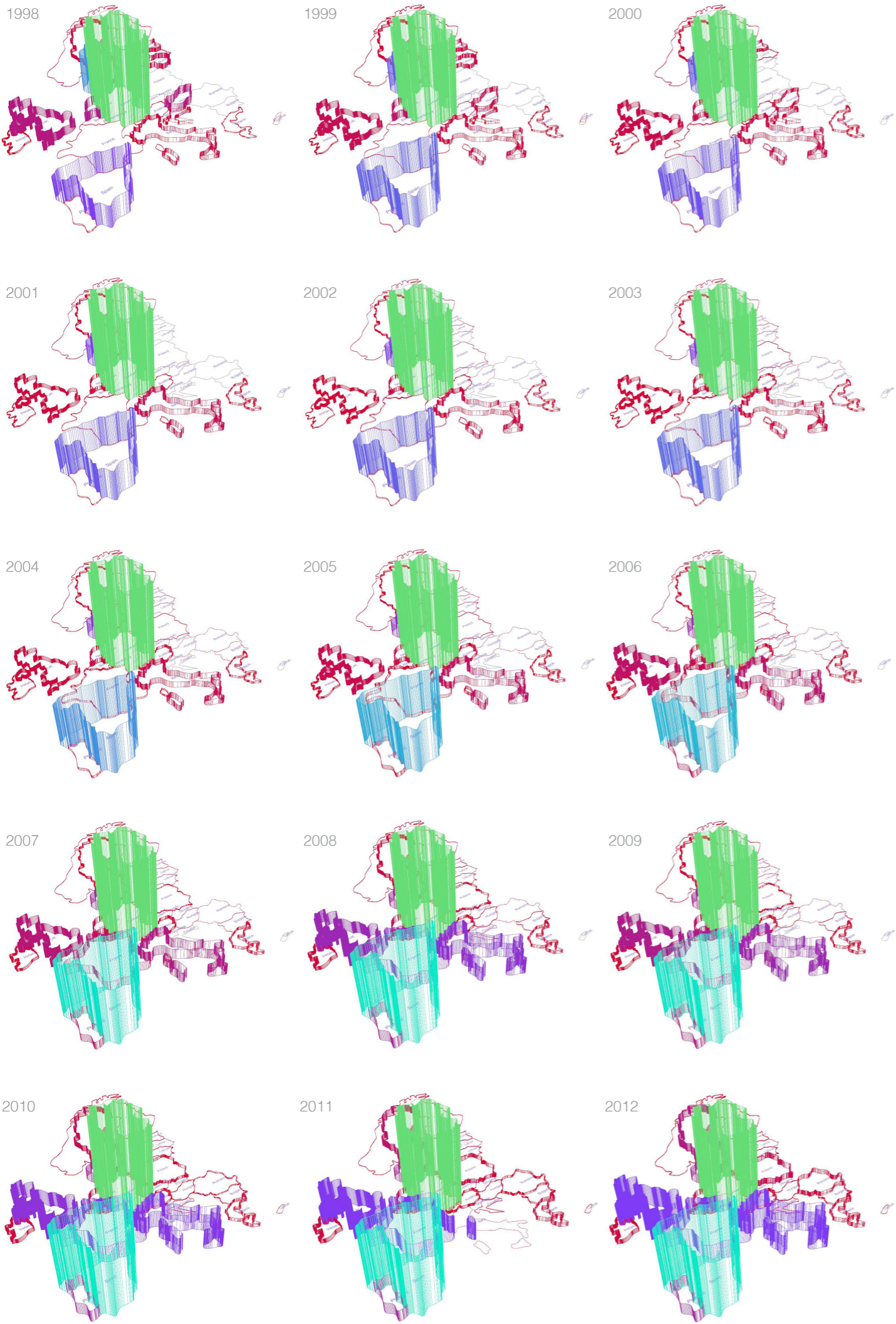
As there is an on going climate crisis we can use all the additional help we can get. Analysing the capacity for wind energy generation in each country allows one to map out future plans. For example reinforcing coastlines where little to nothing has been happening with wind harnessing technology. There is plenty of coastline for exploration.
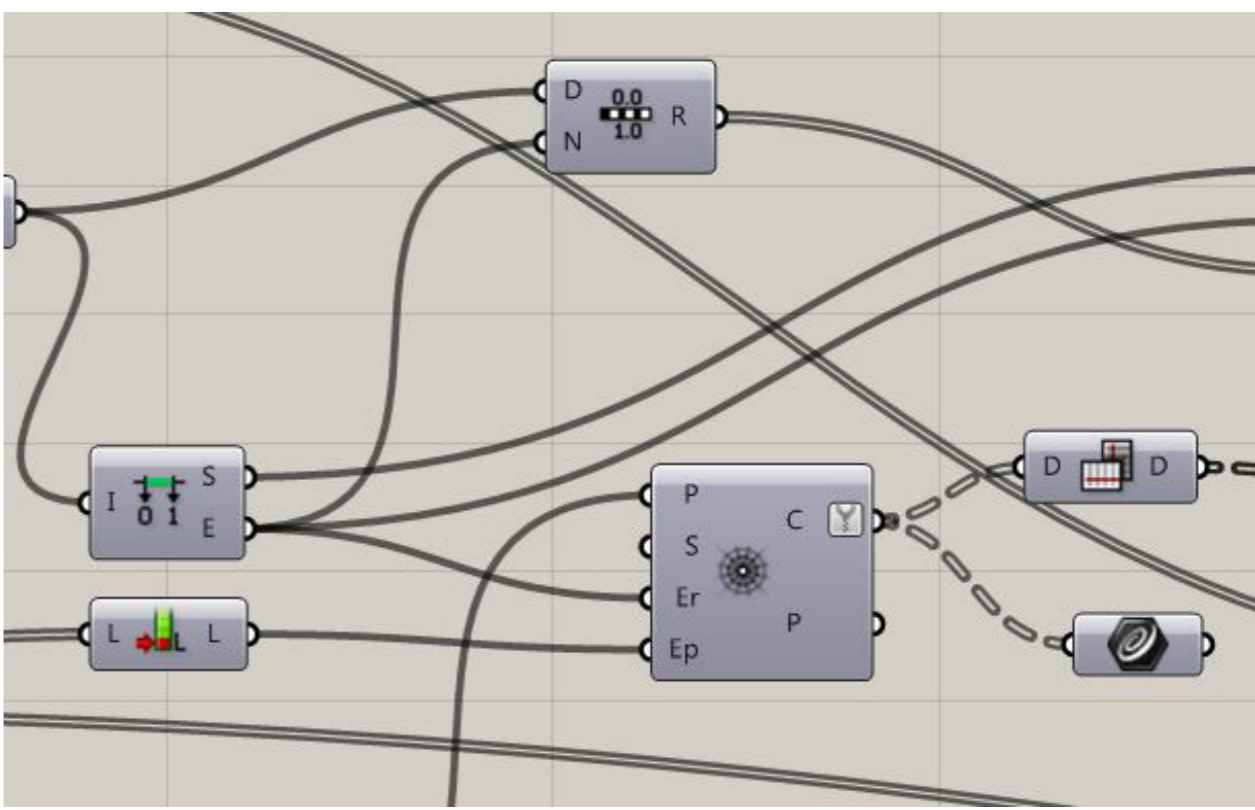
2013

Radial Graph

said all those years ago, ♥just what
you have back there on Earth.◆ And that
image in the photograph, that bright
blue ball rising over the moon◆s
surface, containing everything we hold
dear -- the laughter of children, a
quiet sunset, all the hopes and dreams
of posterity -- that◆s what◆s at stake.
That◆s what we◆re fighting for. And if
we remember that, I◆m absolutely sure
we'll succeed.
Thank you. God bless you. God bless the
United States of America.

Extracting defined data from file.
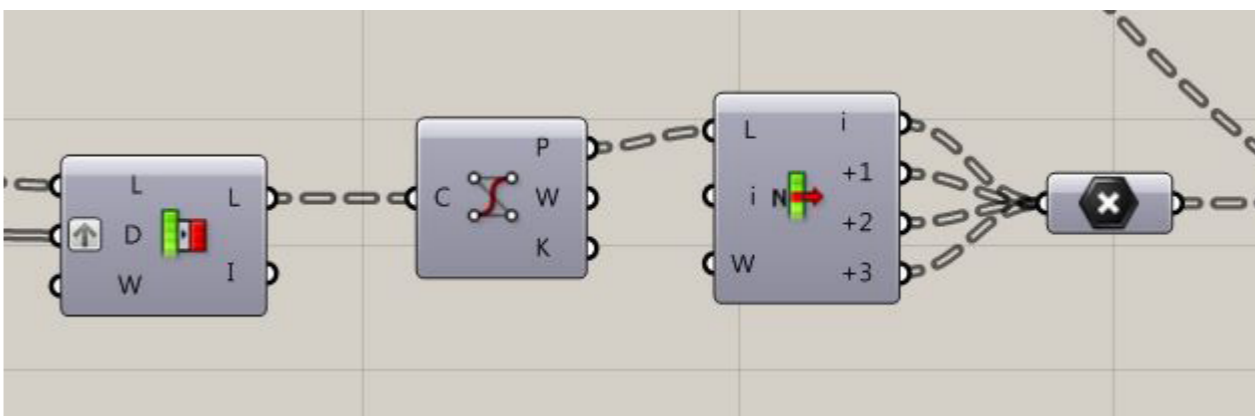
Spreading information from data file radially.

Setting up radial graph.
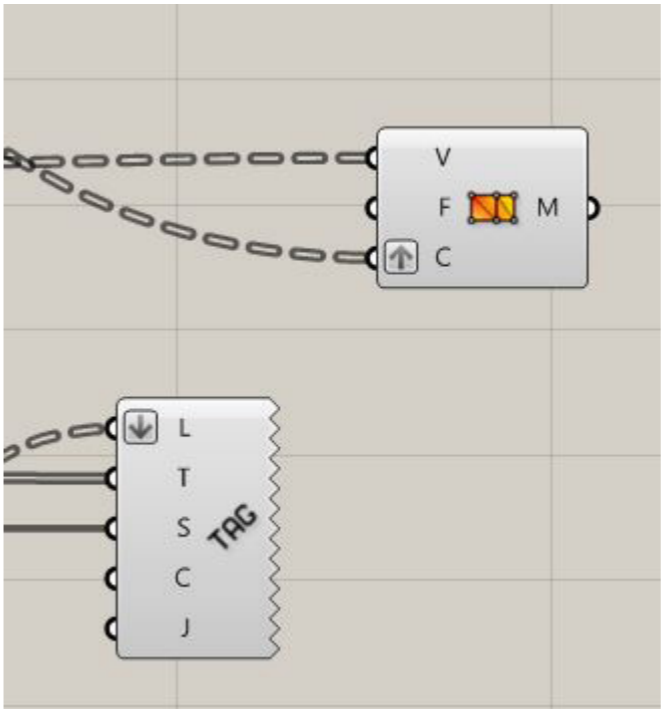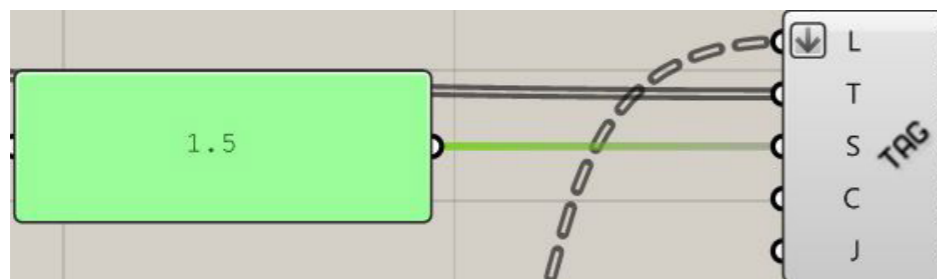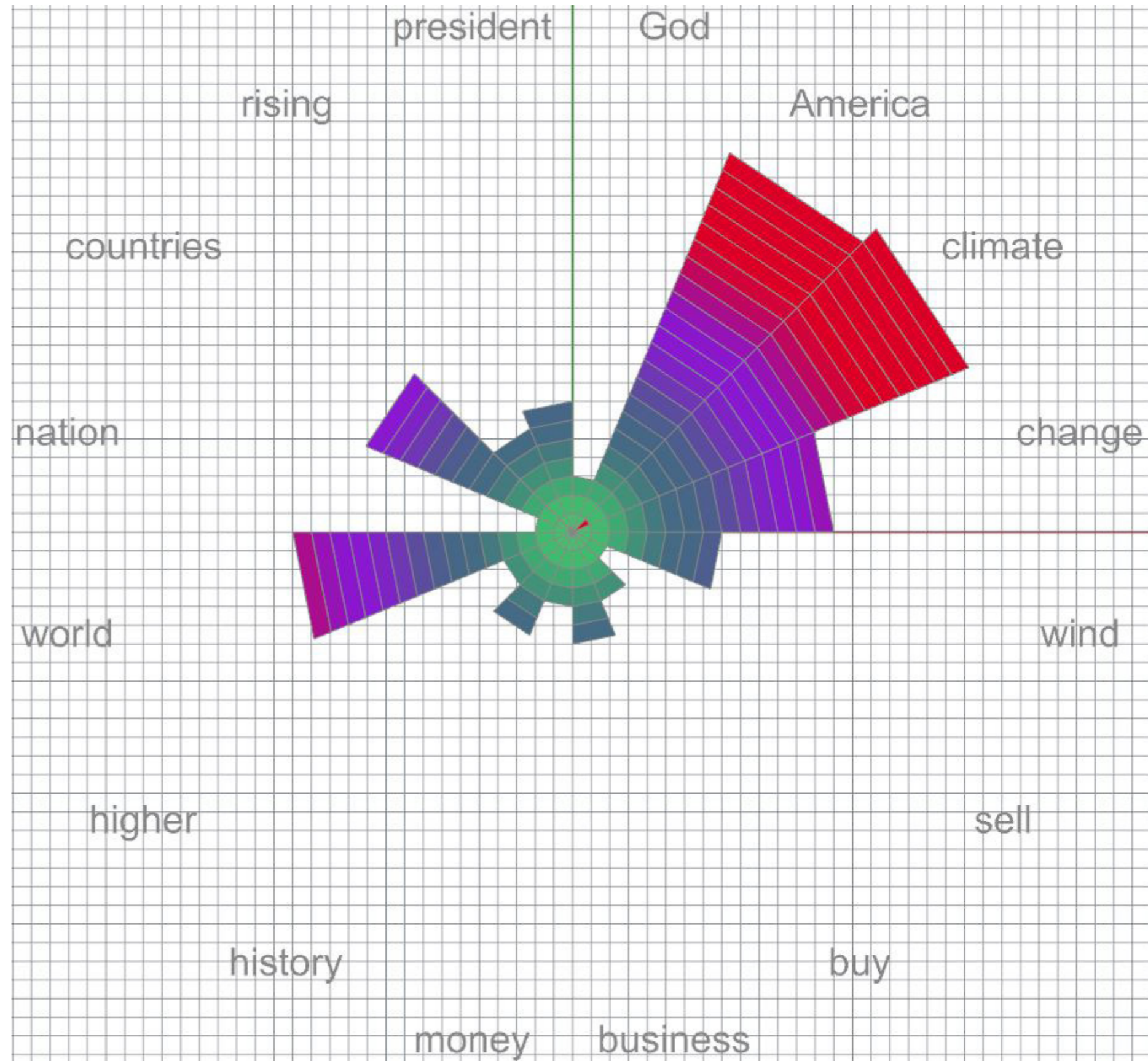
Final representation fo data.

Data rose showing the frequency of certain words
used in one of Obamas speeches on climate change.

	{0}
0	God
1	America
2	climate
3	change
4	wind
5	sell
6	buy
7	business
8	money
9	history
10	higher
11	world
12	nation
13	countries
14	rising
15	president

Key words being searched for.

	{0;0}
0	2
1	21
2	23
3	13
4	7
5	1
6	3
7	5
8	3
9	5
10	3
11	14
12	1
13	11
14	5
15	6

Number of key words found in
speech text.

1.5

L
T
S TAG
C
J

Scale of key words around rose.