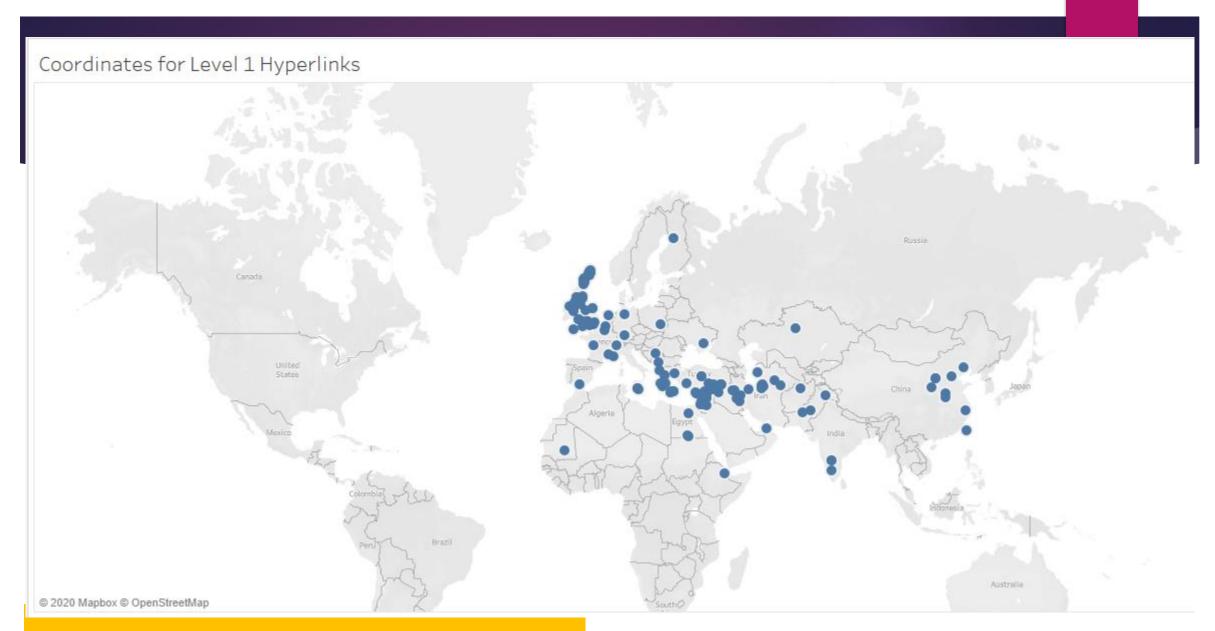
## Concept

Understand network & content related to a Wikipedia search term, 'Neolithic Sites'



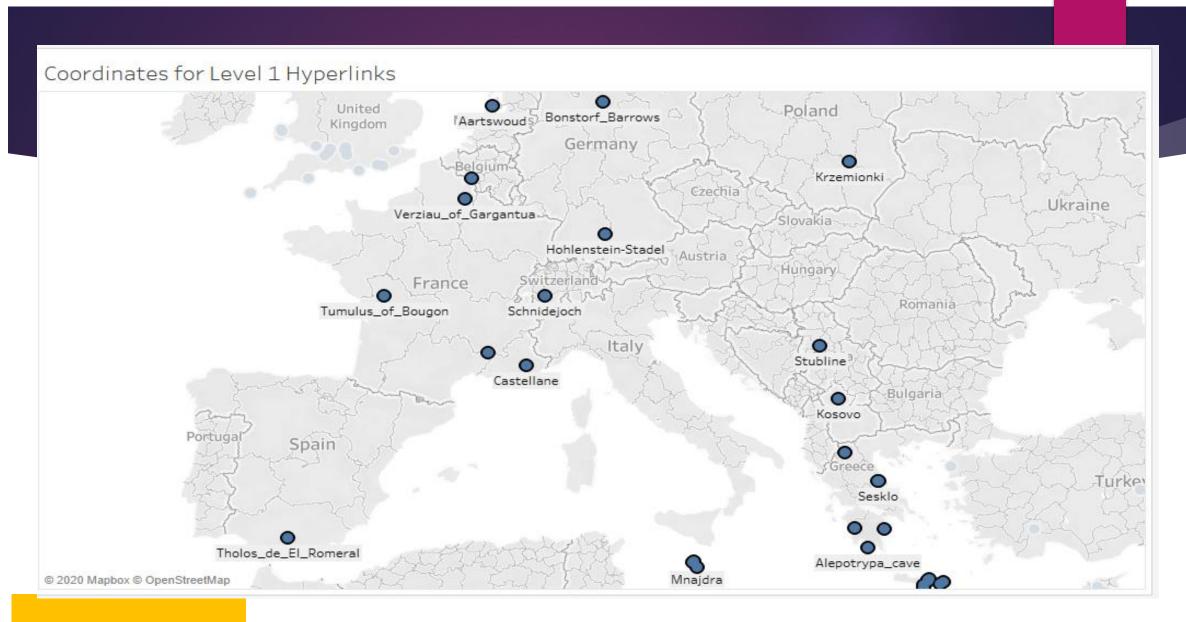
# What do we know about site locations?

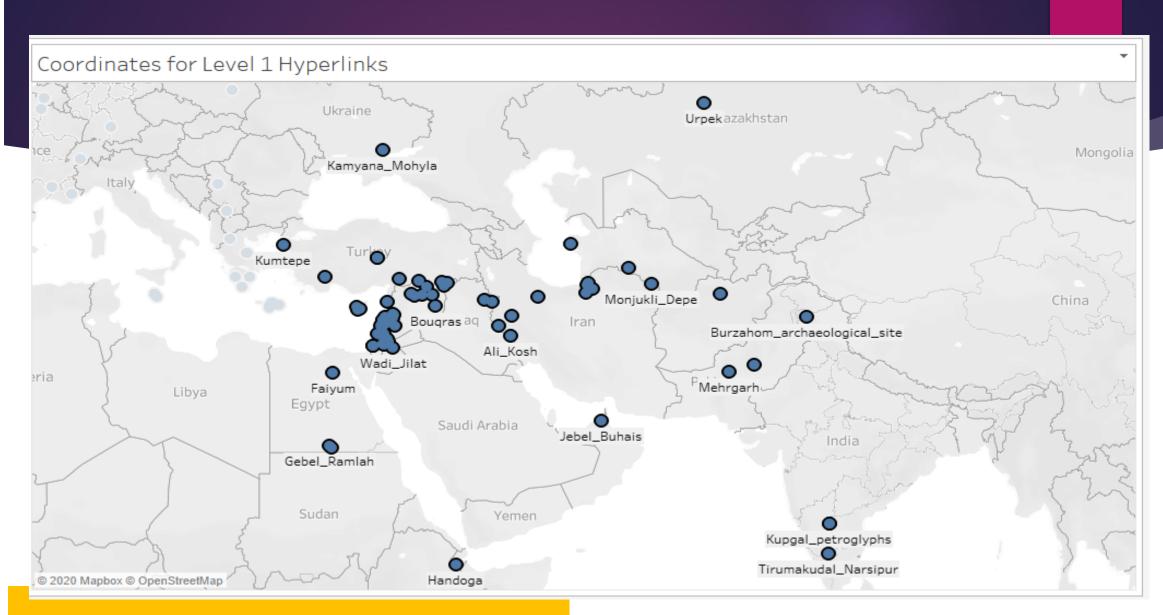
AVAILABLE COORDINATES (182) FOR SEARCH RESULTS (465)

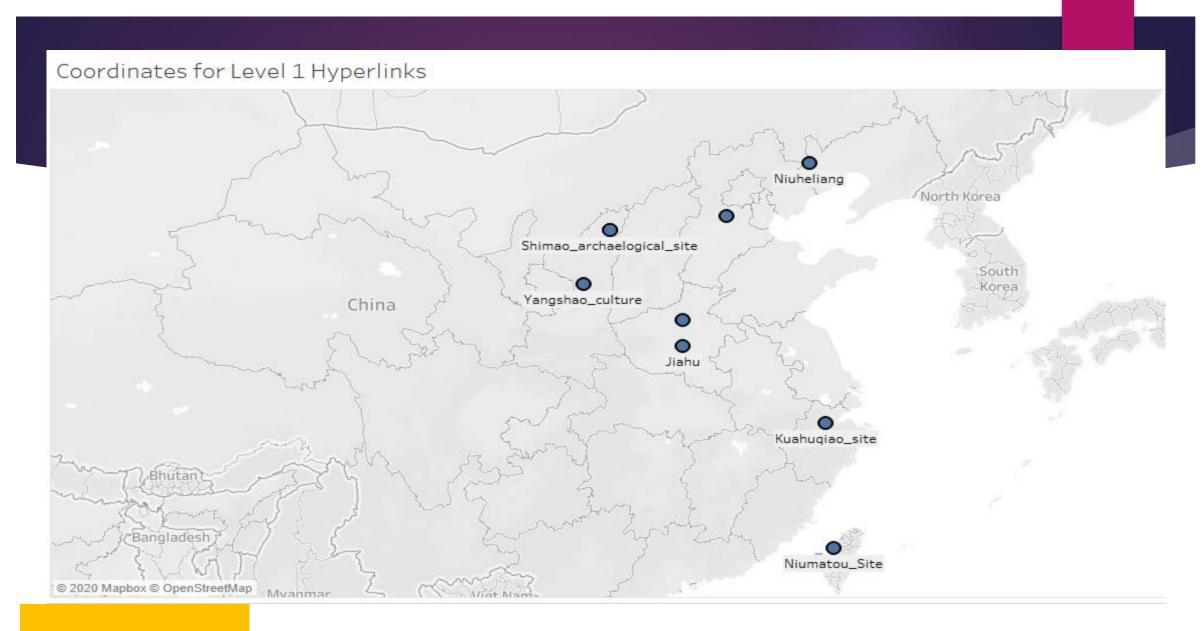


Available Coordinates for All Search Results

#### Coordinates for Level 1 Hyperlinks Norway Jarlshof Grey\_Cairns\_of\_Camster Latvia Denmark Lithuania Cairnholy Hill\_of\_Tara Round\_Loaf United Poland Netherlands) Kingdom Germany Banc\_Du Czechia Innisidgen Slovakia Austria Hungary France © 2020 Mapbox © OpenStreetMap







## Diagnostics

GRAPH ATTRIBUTES

## Diagnostics Summary

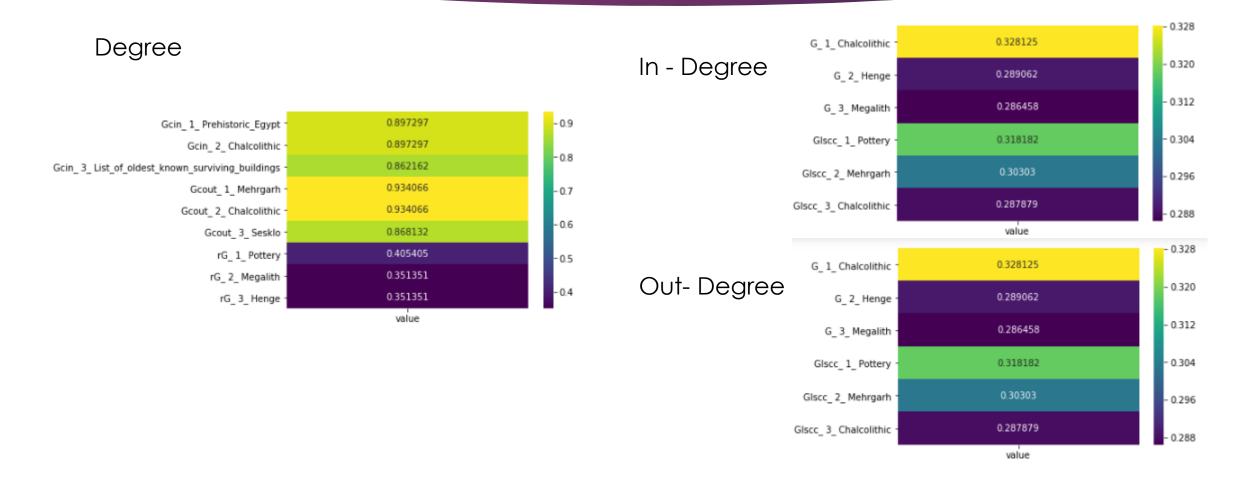
Graph	Nodes, Edges	Directed	Simple	Weighted	Bipartite	Tree	Connected	)#	Strongly Connected	# SCC	Weakly Connected	Isolates	Density	Transitivity	Reciprocity	Average Clustering	Shortest Path
G	383, 3000	X	X							317	X	0	0.021	0.610	0.129		
Gcout	92, 2065		X	Х			Х					0	0.493	0.750		0.803	1.523
Gcin	373, 62167		X	Х				2				0	0.377	0.712		0.828	
RSG	62, 198		X					5				0	0.105	0.825		0.579	

## Centrality

MEASURES OF CENTRAL TENDENCY

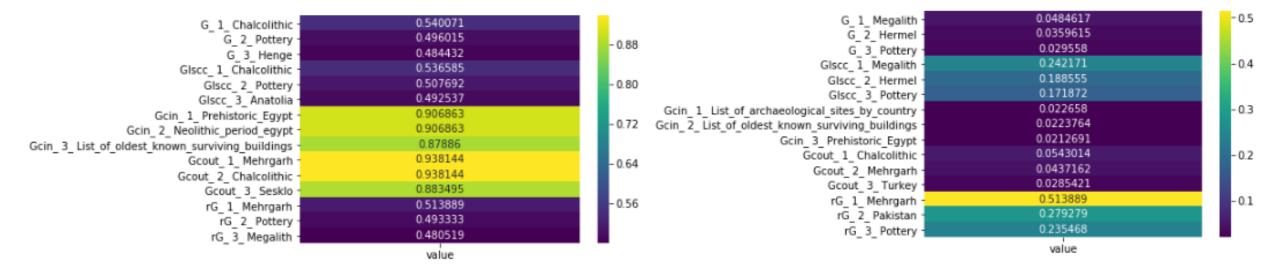
## Top Node

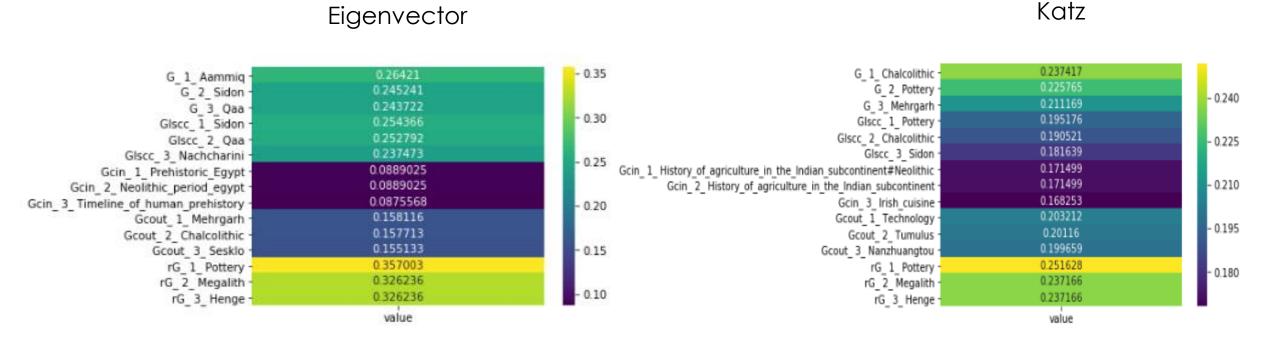
The following 17 sites represent the group of single top nodes for all centrality measures, all graphs: Aammiq Chalcolithic Cyprus Hermel History\_of\_agriculture\_in\_the\_Indian\_subcontinent#Neolithic Linear\_Pottery\_culture List\_of\_archaeological\_sites\_by\_country Megalith Mehrgarh Nachcharini Neolithic\_period\_egypt Pottery Prehistoric\_Egypt Sands\_of\_Beirut Sidon Technology Turkey

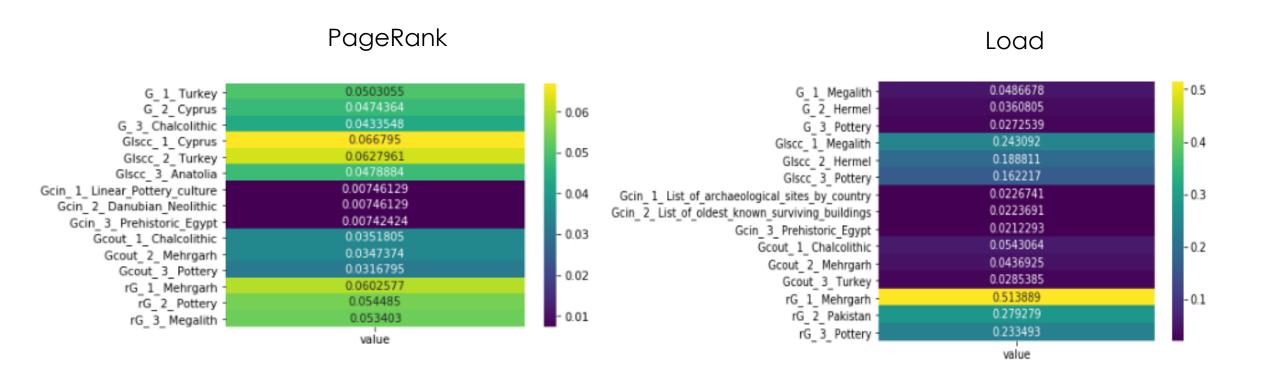


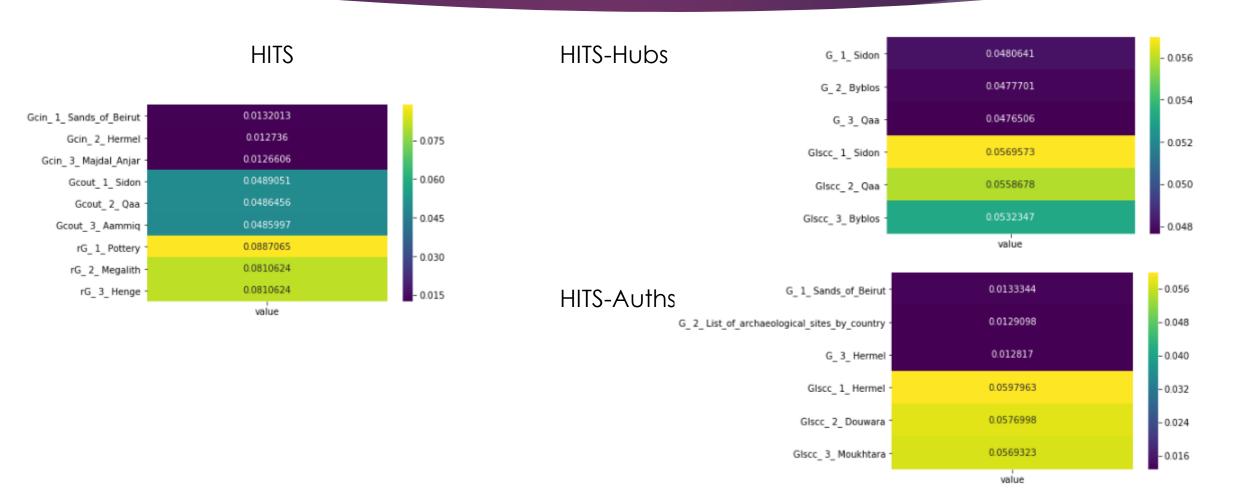
Values are compared for the top 3 nodes across all graphs

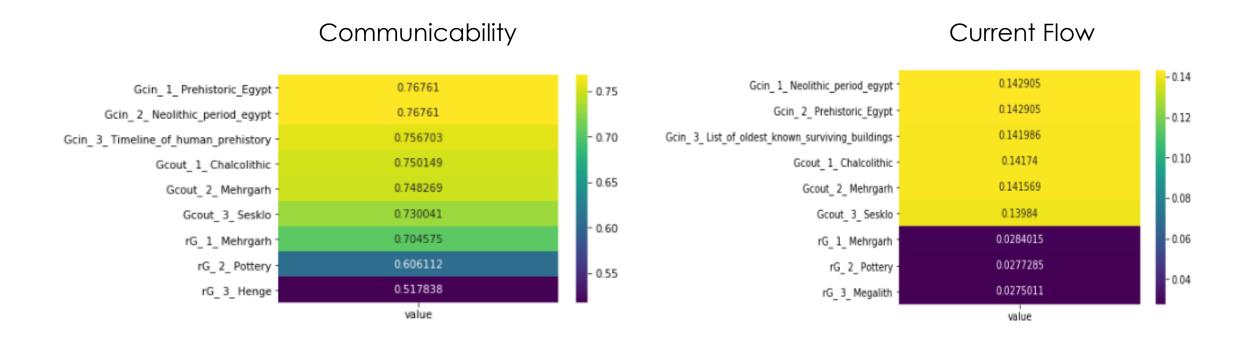
Closeness Betweenness











## Community Detection

GIRVAN-NEWMAN COMMUNITIES

## Directed Graph, Whole Network

The Wikipedia Search Results and Succeeding pages for 'Neolithic Sites' has 2 Girvan-Newman communities

community 0 with 301 nodes

- Includes sites such as

Plastered\_human\_skulls

Xinglonggou

Stone\_circles\_in\_the\_British\_Isles\_and\_Brittany

community 1 with 82 nodes

- Includes sites such as

Riyaq

List\_of\_archaeological\_sites\_by\_country

Neolithic\_Knossos



Betweenness					
1	Megalith	0.05			
2	Hermel	0.04			
3	Pottery	0.03			

## Co-Linked Subgraph

The Wikipedia Search Results and Succeeding pages for 'Neolithic Sites' Co-Linked Graph has 2 Girvan-Newman communities

community 0 with 91 nodes:

- Includes sites such as

Kosovo

Nanzhuangtou

Chalcolithic

community 1 with 1 nodes: Gorgan

Capital City of Golestan Province, Iran

Betweenness					
1	Chalcolithic	0.05			
2	Mehrgarh	0.04			
3	Turkey	0.03			

## Co-Linking Subgraph

The Wikipedia Search Results and Succeeding pages for 'Neolithic Sites' Co-Linking Graph has 3 Girvan-Newman communities

community 0 with 370 nodes:

- Includes sites such as

10th\_millennium\_BC

Archaeological\_sites\_in\_the\_District\_of\_ Mitrovica

British\_megalith\_architecture

Neolithic\_flint\_mines\_of\_Spiennes

Neolithic\_founder\_crops

Girvan-Newman community 1 with 2 nodes: Kupgal\_petroglyphs, Pigeon\_pea

Girvan-Newman community 2 with 1 nodes:
Warp-weighted\_loom

I of 2 Indian sites, Jamaican plant

Machine

Betweenness						
1	List_of_archaeological_sites_by_country	0.02				
2	List_of_oldest_known_surviving_buildings	0.02				
3	Prehistoric_Egypt	0.02				

## Reciprocating Pages Subgraph

The Reciprocating Graph of Wikipedia Search Results and Succeeding pages for 'Neolithic Sites' has 6 Girvan-Newman communities

Girvan-Newman community 0 with 31 nodes: Avebury, Banpo, Bouqras, Chalcolithic, Dimini, Dolmen, Emmer, Henge, Hermel, Jarmo, Jeitun, Jiahu, Khiamian, Koldihwa, Megalith, Mehrgarh, Mesolithic, Mnajdra, Mureybet, Nanzhuangtou, Pottery, Prehistory, Proto-Indo-Europeans, Rye, Sesklo, Spelt, Technology, Tumulus, Wiltshire, Woodhenge, Xinglonggou

Girvan-Newman community 1 with 18 nodes: Aadloun, Akbiyeh, Byblos, Dakoue, Dekwaneh, Douwara, Flaoui, Hohlenstein-Stadel, Jbaa, Jdeideh, Kefraya, Moukhtara, Mtaileb, Nachcharini, Qaraoun, Stravomyti, Ugarit, Urkesh

Girvan-Newman community 2 with 7 nodes: Aceramic, Anatolia, Cyprus, Khirokitia, Kosovo, Pakistan, Turkey

Girvan-Newman community 3 with 3 nodes: Gortyn, Gortyna, Knossos

Girvan-Newman community 4 with 2 nodes: Jarlshof, Orkney

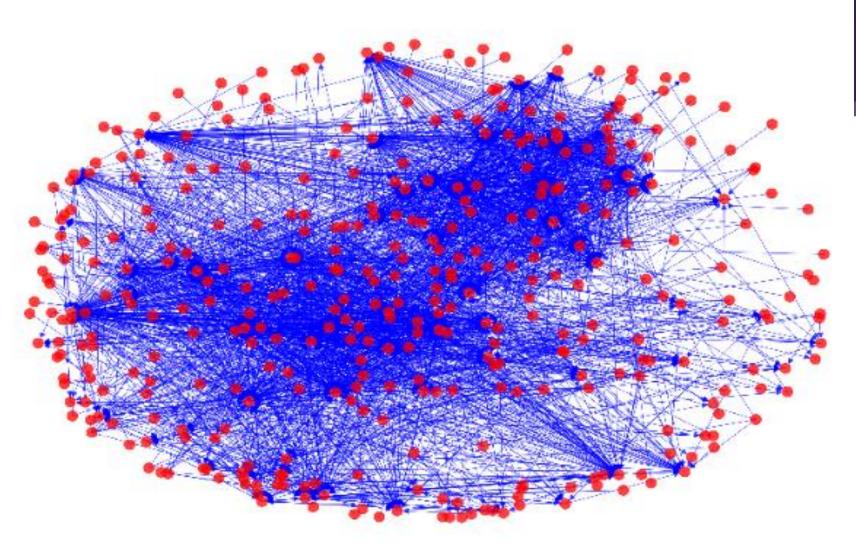
Girvan-Newman community 5 with 1 nodes: Aammiq

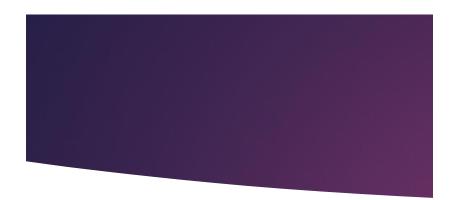
Betweenness						
1	Chalcolithic	0.05				
2	Mehrgarh	0.04				
3	Turkey	0.03				

## Plots

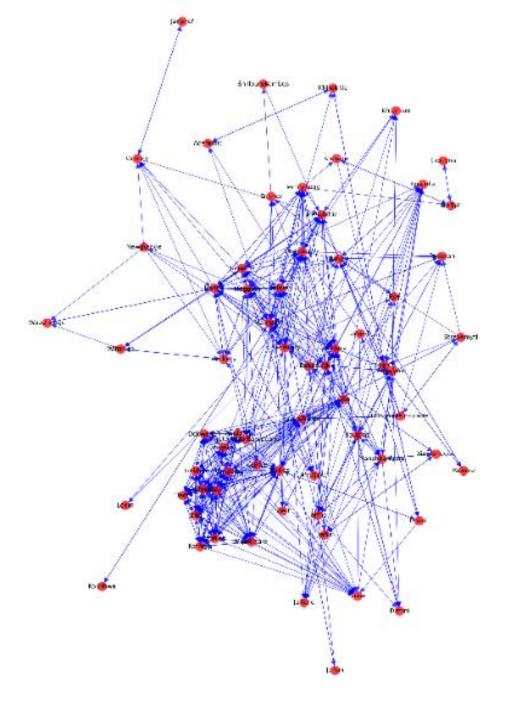
GRAPH VISUALIZATION

## Entire Network

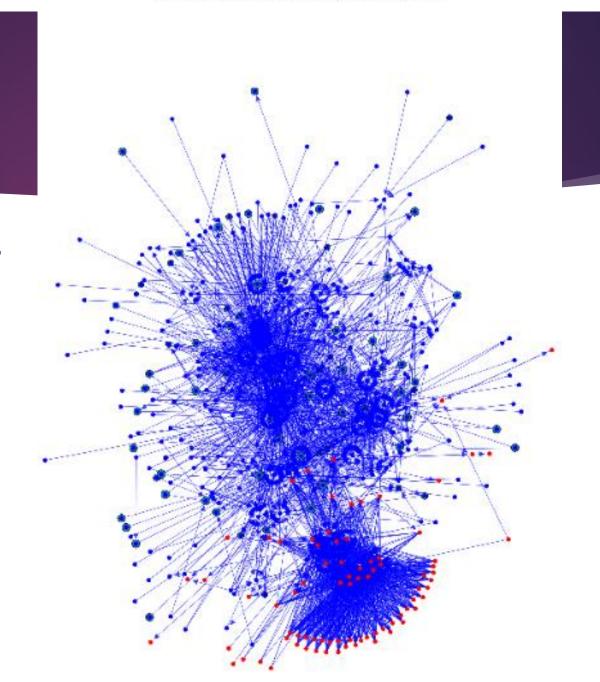




## LSCC

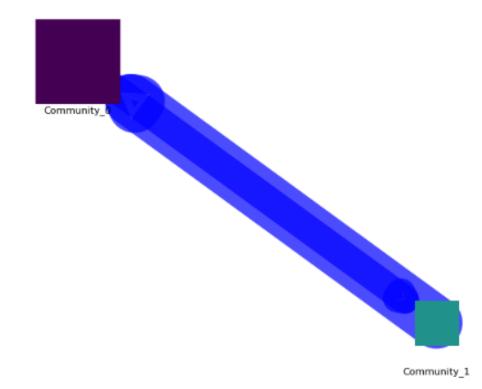


Communities – Entire Network

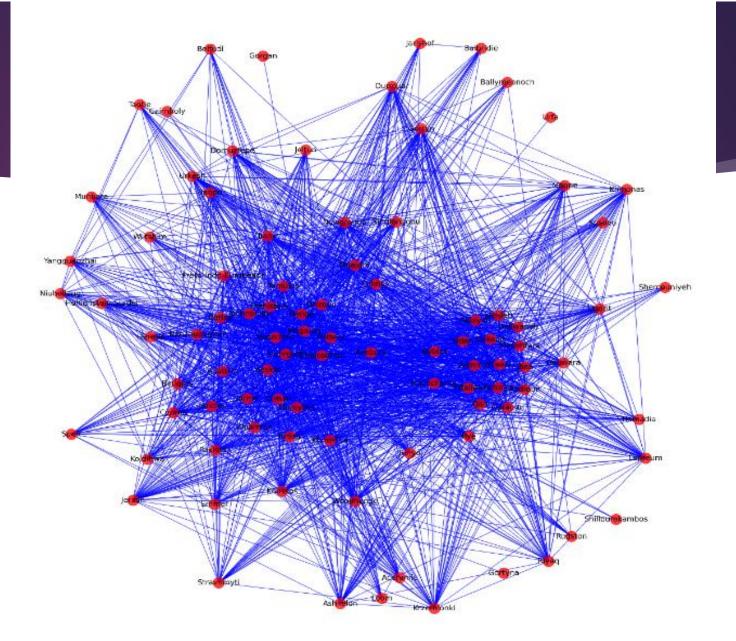


The graph of the 2 aggregated Girvan-Newman communities of the Wikipedia Search Results and Succeeding Pages for 'Neolithic Sites'

Aggregate
Communities –
Entire
Network



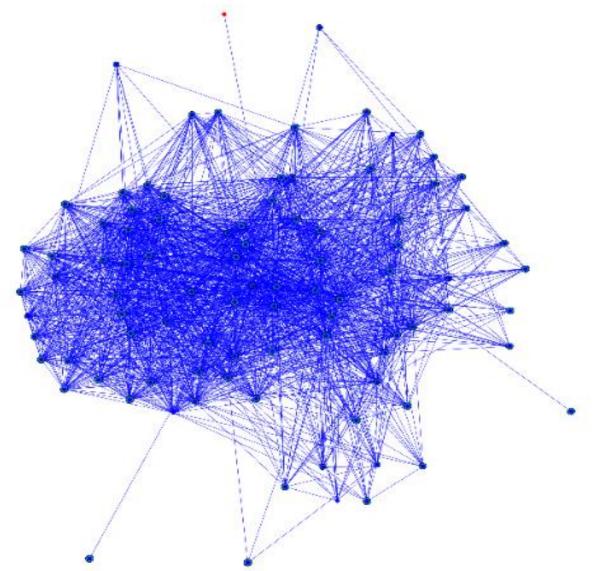
# Co-Linked Graph GCout





## Gcout Communities

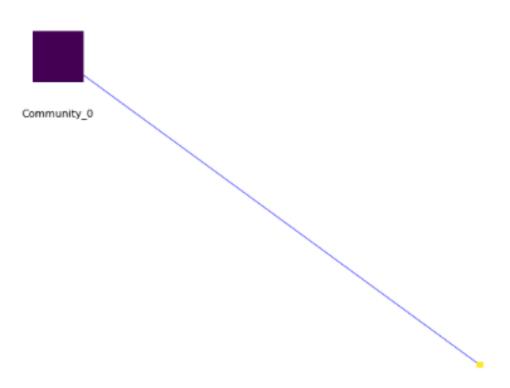






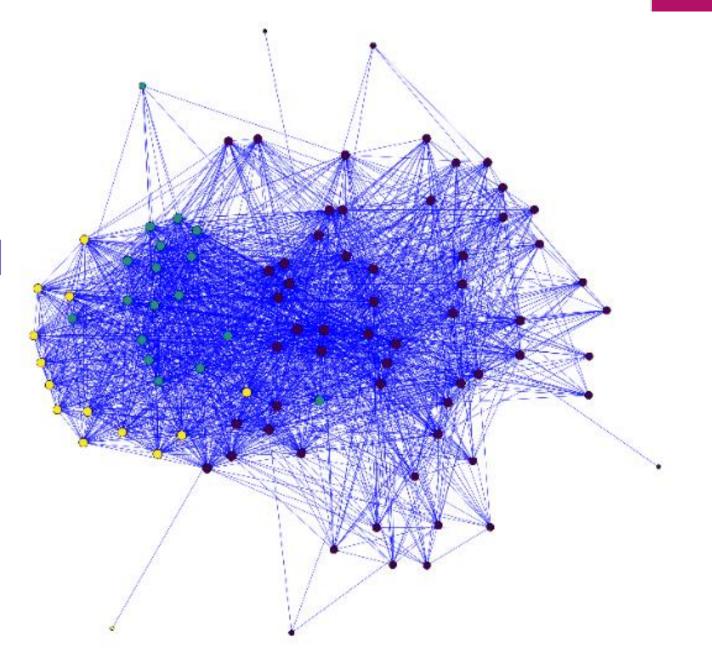
The graph of the 2 aggregated Girvan-Newman communities of the Wikipedia Search Results and Succeeding Pages for 'Neolithic Sites'

## Aggregated Gcout Communities

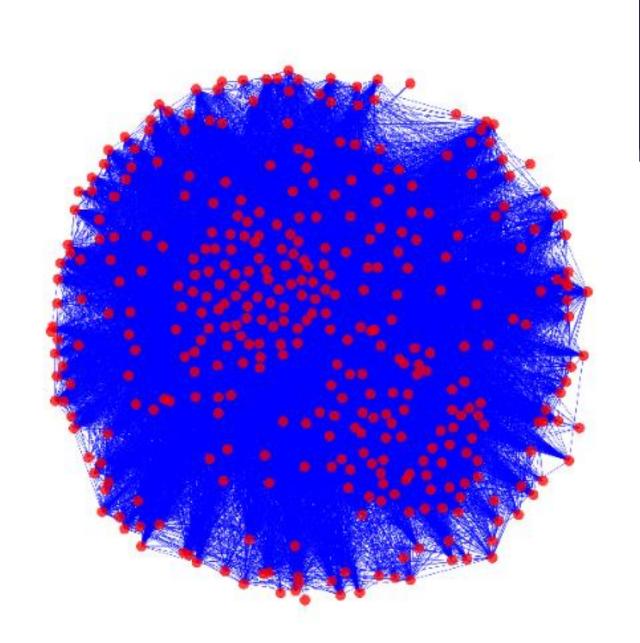


Community\_1

Co-Hyperlinked Gcout Communities

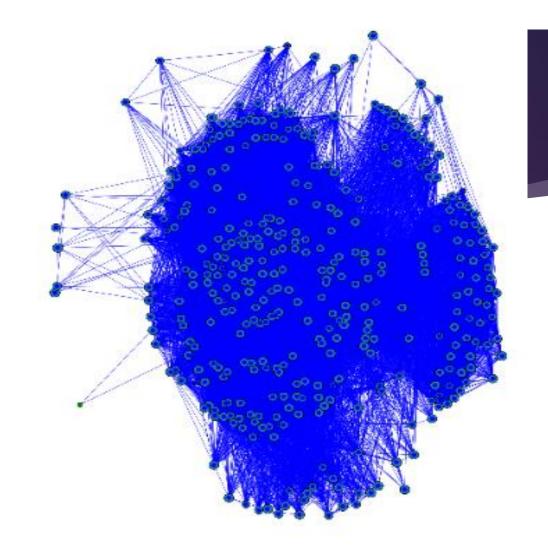


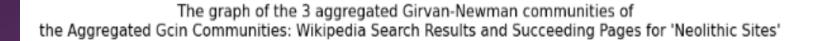
## Co-Linking Graph Gcin





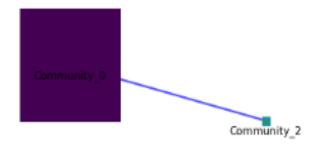
## Gcin Communities



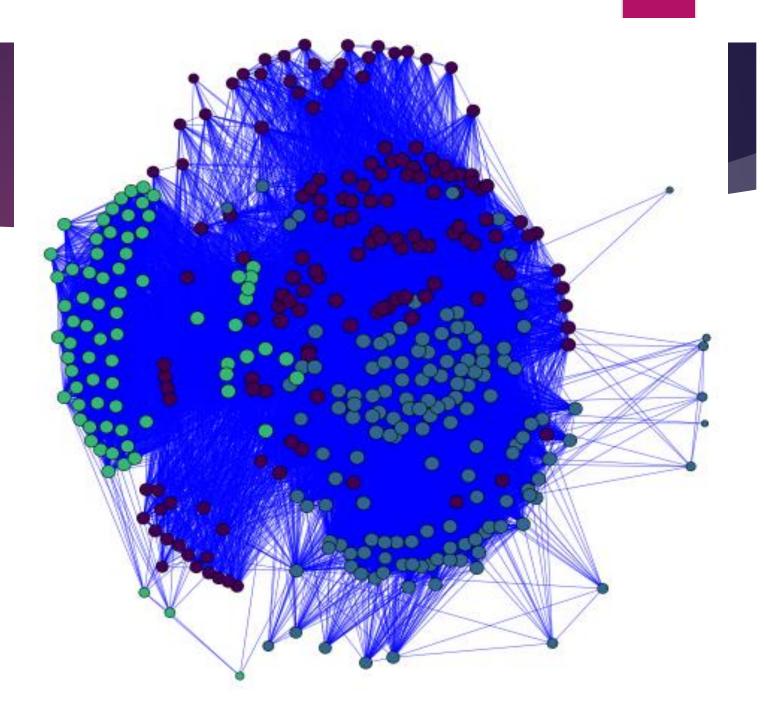


## Aggregated Gcin Communities

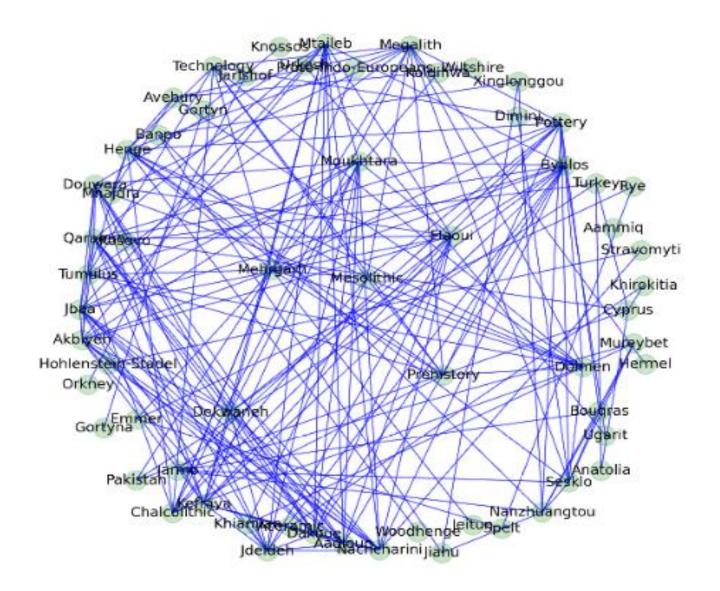




Co-hyperlinking
Gcin
Communities



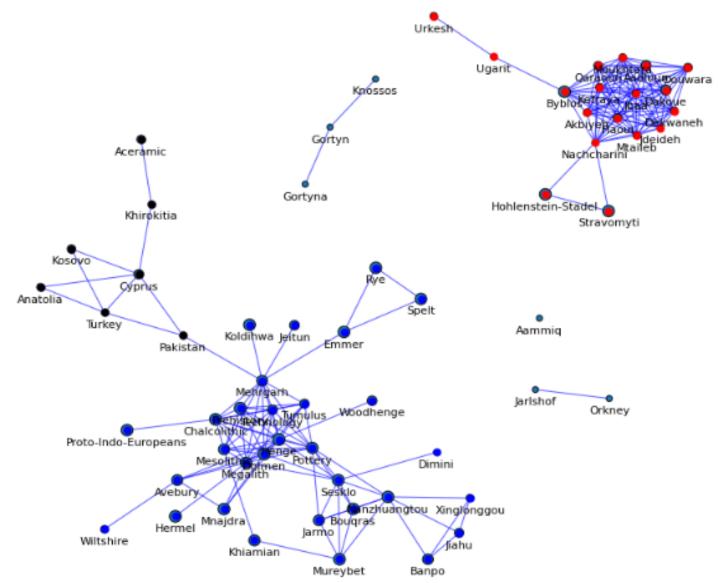
## Reciprocating Subgraph





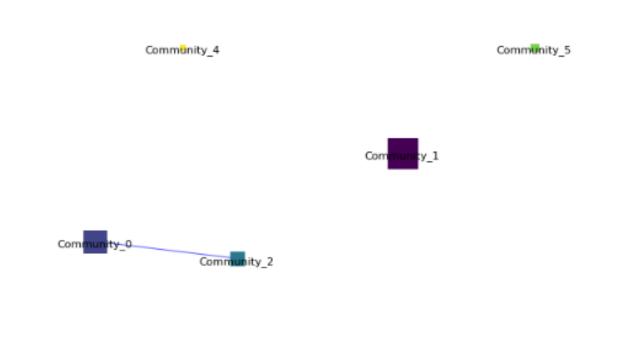
## Reciprocating Subgraph Communities

The 6 Girvan-Newman communities of the rG Communities: Wikipedia Search Results and Succeeding Pages for 'Neolithic Sites'



The graph of the 6 aggregated Girvan-Newman communities of the Aggregated rG Communities: Wikipedia Search Results and Succeeding Pages for 'Neolithic Sites'

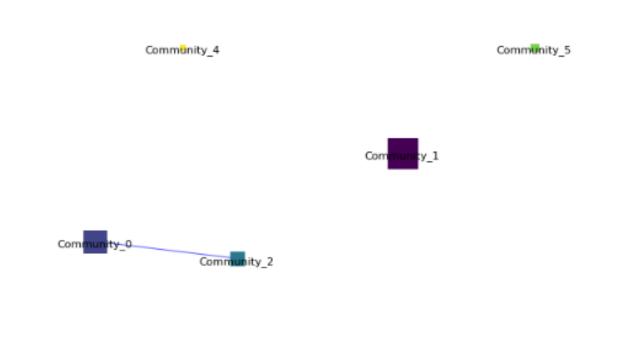
## Aggregated Reciprocating Subgraph Communities



Community\_3

The graph of the 6 aggregated Girvan-Newman communities of the Aggregated rG Communities: Wikipedia Search Results and Succeeding Pages for 'Neolithic Sites'

## Aggregated Reciprocating Subgraph Communities



Community\_3