Electronic Supplementary Material:

The interplay between social networks and culture: theoretically and among whales and dolphins

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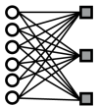
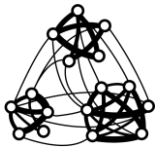
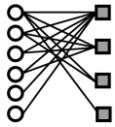
Table S1. Glossary of network terminology and its interpretation in the context of animal societies, based on [1-7].

	Definition	**Meaning in the animal social context**
Network, graph 	Collection of points (see "nodes") joined in pairs by lines (see "edges") according to a defined relationship.	Population of individuals represented by nodes and connected by their social relationships represented by edges.
Nodes, vertices 	Points in the network diagram, representing the elements of the studied system. Nodes can have different states.	Usually represent identified individuals, but can represent higher levels of social structure. States of nodes include sex, age, behaviour types.
Edges, links, ties 	Connecting lines between two nodes in the network, representing a relationship between the elements of the system.	Represents the social relationship between two individuals.
Binary edges 	Edges can be present or absent and represent the presence of a qualitative relationship between two nodes in a network.	Presence or absence of a social relationship (or social interactions) between two identified individuals.
Weighted edges 	Quantitative relationships between two nodes in a network, whose weights are proportional to the relationship intensity.	Quantitative measure of social relationships. Commonly, weighted edges represent the proportion of time two individuals spend associated, estimated by association indices [7], or the rate at which they interact per unit time.
One-mode network 	Networks in which all nodes have the possibility of being connected.	Animal social networks themselves are examples of one-mode networks: all pairs of individuals may have a relationship.

Two-mode network 	Networks whose nodes are divided into two distinct sets, with edges only occurring between different sets of nodes.	Figure 4 is a two-mode network, illustrating individuals connected to the behaviour types that they perform.
Coevolutionary (or adaptive) network	Network exhibiting a feedback loop between the local and topological dynamics, i.e. the state of the nodes and the evolution of the network structure.	We suggest that this feedback loop can represent the interplay between changes in individual behaviour and the social structure, mediated by social learning occurring during social relationships (see Fig. 1b).
Topology of the network	The arrangement of the nodes and the pattern of relationships between them; the structure of a network.	The topology of a social network is an illustration of the social structure of a population.
Modular structure 	Network composed of weakly interlinked groups of nodes, which are strongly internally connected.	A modular social network depicts sets of individuals that interact or associate at high frequency with each other, and at lower frequency with individuals of other modules.
Nested structure 	In a nested two-mode network, some nodes have more interactions than others and there is a tendency for interactions of nodes with few interactions to be a proper subset of the interactions of nodes with more interactions	Figure 4 contains a nested individual-strategy network in which individuals that perform few strategies tend to perform a proper subset of the behavioural strategies performed by the individuals that perform several strategies.
Small-world properties 	Networks in which two nodes that are both linked to a third node tend to be themselves linked and in which there is a small average shortest path length between individuals.	In a small-world network, most individuals are not directly related to each other, but almost everyone can be reached from every other by a small number of relationship steps.
Shortest path length	The least number of steps between two connected individuals that separate two nodes in a network.	Measures the shortest distance between two individuals in a social network, in terms of number of intermediate relationships. It is a measure of the efficiency of information transmission.
Connectance	The proportion of realized edges in relation to possible edges.	Total number of dyadic relationships given the total number of possible dyadic relationships.

Strength	The sum of the weights of all edges connected to a node.	Sum of intensity of all social relationships of a given individual, sometimes called gregariousness.
Closeness centrality	Total distance of a given node to all other nodes in the network, defined by the inverse sum of its shortest distances to all other nodes.	A measure of how related an individual is to all others in the social network.
Betweenness centrality	Measures the degree to which a node lies on the shortest path between two other nodes.	Measures the number of shortest paths that passes through an individual; thus individuals with high betweenness may funnel and control the flow of information through the social network.

References

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