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WEBINAR

PERSPECTIVES ON EVOLUTION AND SOCIAL COMPLEXITY

PERSPECTIVES ON EVOLUTION AND SOCIAL COMPLEXITY

WEBINAR

November 14, 2022
2pm EST
Youtube link
https://www.youtube.com/watch?v=SAJ2_EO1tmI

Bernardo Nery
Evolutionary and cognitive aspects of property and trade

Walter Silva
Mass Politics as an Evolutionary Mismatch

Daniel Barreiros
The social costs of economic complexity : the market economy in the long durée

Felipe Blois
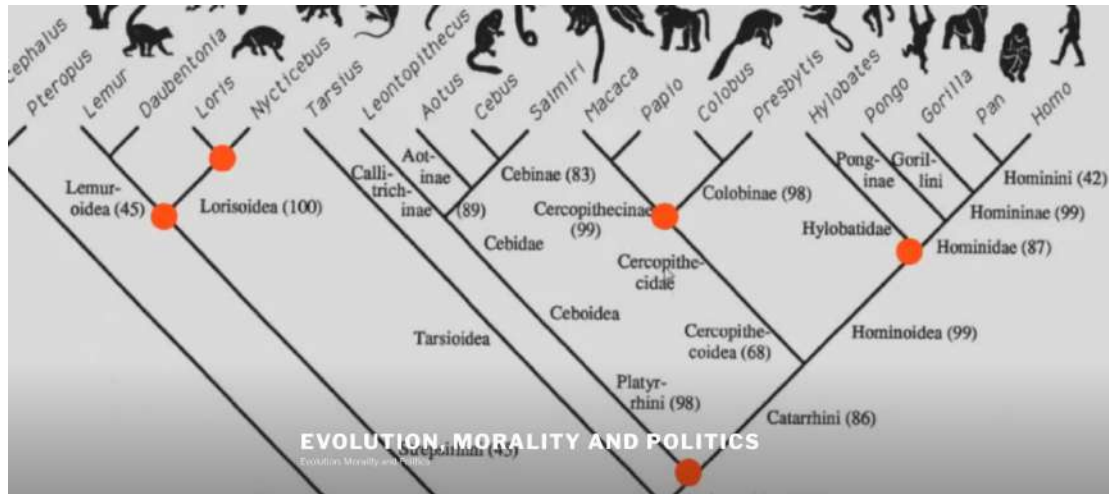Efflorescences: feedback loops between technology, innovation and culture

Gabriel   **Gonçalves**
Environmental effects of Soviet investment in Central Asia (1924- 1991): seas of salt, cotton and oil

Daniel Vainfas
Climate change and the origins of capitalism in England

http://evolutionmoralitypolitics.com/

https://www.facebook.com/evolutionmoralitypolitics

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Mass Politics as an Evolutionary Mismatch

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Definition of Evolutionary Mismatch

"The idea that organisms are often **adapted to their past** but **not their present environment** is called "**mismatch theory**" and is frequently invoked by evolutionary psychologists."

(Wilson, David Sloan. *Evolution for everyone: How Darwin's theory can change the way we think about our lives*. New York: Delacorte Press, 2007, p. 353)

Classic example of evolutionary mismatch → **modern food preferences**

Only 12 percent of American adults are metabolically healthy, Carolina study finds

Only 1 in 8 Americans are achieving optimal metabolic health, which carries serious implications for public health.

Prevalence of Optimal Metabolic Health in American Adults: National Health and Nutrition Examination Survey 2009–2016

Joana Araújo, Jianwen Cai, and June Stevens ✉

Evolutionary mismatch in mass politics

Lenin at a rally of workers of the Putilov factory in May 1917. Isaac Brodsky, 1929
(Museum: State Historical Museum).

Coevolution of neocortical size, group size and language in humans

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Experimental Psychology

HOME   ABOUT US   PEOPLE   RESEARCH   STUDY WITH US   NEWS   EVENTS   GET INVOLVED   JOB OPPO

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RESEARCH SUMMARY

My research is concerned with trying to understand the behavioural, cognitive and neuroendocrinological mechanisms that underpin social bonding in primates (in general) and humans (in particular). Understanding these mechanisms, and the functions that relationships serve, will give us insights how humans have managed to create large scale societies using a form of psychological that is evolutionarily adapted to very small scale societies, and why these mechanisms are less than perfect in the modern world. This has implications for the design of social networking sites as well as mobile technology. We use conventional behavioural and cognitive experimental approaches, combined with network analysis, agent based modelling, comparative studies of primate brain evolution, neuroimaging and neuroendocrinology to explore explicit and implicit processes at both the dyadic and the group level. An important feature of our behavioural studies has been the constraints that time places on an individual's ability to manage their relationships, and the cognitive tricks used to overcome these.

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CV

PDF document 726.5 KB

ROBIN DUNBAR PUBLICATIONS

Publications

PDF document 918.7 KB

3 main points to highlight

1) Dunbar's previous studies on nonhuman primates show that:

"**Group size covaries with relative neocortical volume in nonhuman primates**." (p. 681)

2) The same applies to human primates:

"**a group size for modern humans very similar to that for hunter-gatherer and traditional horticulturalist societies.**" (p 681)

3) Grooming in nonhuman primates **= conversation** in human primates

Grooming = conversation = bonding process

Grooming   **=**   **Conversation**

There are cognitive constraints in ALL animals

→ "…animals cannot maintain the **cohesion** and **integrity of groups** larger than a size fixed by the **information-processing capacity of their neocortex**".

→ "The group size identified by this relationship appears to depend on the **maximum number of individuals with whom an animal can maintain social relationships by personal contact**" (p. 681)

Time devoted to social grooming   ⇆   group size

Table 1. *Group sizes in modern hunter-gatherer societies*

Society	Location	Mean size[a] Overnight camp	Mean size[a] Band/ village	Tribe	Source
Walbiri	Australia	c. 25–30	221.5	886	Meggitt (1965a)
various	New Guinea	—	128.7[b]	?	Ellen (1978)
Tauade[c]	New Guinea	27.3	202.5	1,237.3	Hallpike (1977)
Mae Enga[d]	New Guinea	48	90 (350)	2,290	Meggitt (1965b)
Gebusi	New Guinea	26.5[e]	53–159	450	Knauft (1987)
Kaluli	New Guinea	60.0[f]	109.1	1,200	Schieffelin (1976)
Ruhua Nualu	Indonesia	—	180.0[b]	?	Ellen (1978)
Bihar	India	26.8	90–120	c. 1,625	Williams (1974)
Andamanese	Andaman Is	40–50	?	471	Williams (1974)
G/wi San	S. Africa	21–85	?	2,000	Silberbauer (1972)
!Kung San	Botswana	18.6	152.3	2,693	Lee (1982)
Mbuti	Zaire	—	60–150[b]	?	Harako (1981) Turnbull (1968)
Aka	W. Congo	25–35	60–100	(c. 1,050+)	Hewlett (1988)
Ammassalik	Greenland	31.8	?	413	Service (1962)
Inuit	Canada	?	150.0	483	Irwin (1987)
Central Eskimo	Canada	?	c. 100	600	Damas (1968)
Dogrib	USA	c. 10–60	c. 60–250[f]	?	Helm (1968)
Shoshone	USA	62.7	?	?	Service (1962)
California Indians	USA	c. 50–75	?	?	Steward (1955)
Yanomamo	Venezuela	—	101.9[b]	663[g]	Chagnon (1979)
Ona	Tierra del Fuego	40–120	?	?	Steward (1936)
Mean[h]:		37.7	148.4[i]	1,154.7	
Sample size:		8	9	13	
Coefficient of variation (%):		41.7	29.1	64.4	

Dunbar's number

150

→ "The **average size** of the intermediate-level groups for those societies for which accurate census data are available is **148.4** (range 90-221.5, N = 9)." (p. 685)

→ "this level of grouping is that it constitutes a **subset of the population that interacts on a sufficiently regular basis** to have **strong bonds based on direct personal knowledge**." (p. 686)

Other occurrences of Dunbar's number

→ "... estimates of the size of **Neolithic villages in Mesopotamia** are of about the same magnitude. Oates (1977), for example, gives a figure of **150-200**, based on 20-25 dwellings as the typical size of a number of village sites dated to around **6500-5500 B.C.**"

→ "the mean size of the 51 communities (or *Bruderhoefe*) in the Schmedenleut section of the **Hutterites** (a fundamentalist group who live and farm communally in South Dakota and Manitoba) is 106.9 individuals (Mange & Mange 1980). According to Hardin (1988), the Hutterites regard **150** individuals as the **limiting size for their farming communities**: **once a community reaches this size, steps are taken to split it into two daughter communities**.

→ "... Bryant (1981) provides another example from an **East Tennessee rural mountain community** (all of whom claim to be related to each other and regard themselves as a single social group): the total number of living members was **197** when the community census was taken at **the end of the 1970s.**" (p. 686)

→"Becher (**1989**) sampled network sizes (defined as the number of individuals whose work you pay attention to) in 13 academic subdisciplines drawn from both the sciences and the humanities and concluded that **the typical size of the outer circle of professional associates that defines a subdiscipline is about 200** (with a range of 100-400)."

→ **Size of organised/professional armies**:

→ "In the **Roman Army** of the classical period (350-100 B.C.), the basic unit was the maniple (or "double-century"), which normally consisted of **120-130 men**."

→ "The **smallest independent unit in modern armies (the company)** invariably contains **100-200 men** (normally three or four rifle platoons of 30—40 men each, plus a headquarters unit, sometimes with an additional heavy weapons unit."

→ "**Military planners have presumably arrived at this figure as a result of trial and error over the centuries**." (p. 686)

Table 2. *Sizes of the smallest independent unit (a "company")*
in selected professional armies

Period	National army	Size
16th century	Spain	100–300
	England	100
17th century	Sweden/Germany	106
	England: c. 1650	110
	c. 1670	80
20th century	USA: 1940	223
	1945	193
	1960	212
	Britain: 1940	124
	USSR: 1940	139
	France: 1940	185
	Italy: 1940	198
	Germany: 1940	185
	1943	147
	Japan: 1940	190

Source: MacDonald (1955).

Language = grooming

Table 3. *Grooming time requirements for hominoids, based on group sizes predicted by neocortex ratio*

Genus	Neocortex ratio[a]	Predicted group size[b]	Grooming time requirement (%)[c]
Gibbon	2.08	14.8	34
Orangutan	2.99	50.7	13.8
Gorilla	2.65	33.6	8.8
Chimpanzee	3.2	65.2	17.9
Human	4.10	147.8	41.6

[a]Based on neocortex and total brain volumes given by Stephan et al. (1981) or Dunbar (1992a).
[b]Predicted by equation (1).
[c]Predicted by equation (2).

Language = grooming

→ "A figure of around **20%** seems to be an absolute upper limit on the amount of time that **primates** can afford to devote to social interaction."

→ "The group size predicted for **modern humans** (…) would require as much as **42% of the total time budget to be devoted to social grooming**."

→ "A group of **200**, for instance, would have to devote **56.6% of its day to social grooming**." (p. 688)

→ **Modern humans**:

→ **Speech** → can "be combined with almost every other activity"
　　　　→ "can also be used to address several different individuals simultaneously"

→ **Language**→ "**'cheap' form of social grooming**"; "a form of **vocal grooming**" (p.689)

→ **Social intelligence hypothesis**; power of **gossip** in human sociality

Table 4. *Topics of conversation in naturally formed groups in a university refectory*

Topic	Percentage of conversation[a]	
	males	females
Personal relationships	35.1	41.2
Personal experiences	23.2	24.2
Future social activity	6.4	9.0
Sport/leisure	8.6	6.7
Culture (art, music, etc.)	4.6	4.7
Politics, religion, ethics	3.1	4.1
Academic-related matters	19.0	10.1
Sample size	453	614

[a]Based on conversations sampled from 19 groups; the topic of conservation was determined at 30-sec intervals (for details, see Dunbar & Duncan, in preparation).

Table 5. *Human interactional group sizes*

Type of group	Mean group size	Source
Freely interacting groups[a]	2.7	Coleman (1964)
Subcommittees (U.S. Congress)	7.1	James (1952)
State and city board committees	5.5	James (1952)
Business corporation boards	5.3	James (1952)
Restaurant reservations	3.8	Cohen (1971)

[a]Individuals recorded interacting in groups (solitary individuals excluded) at the public beach picnic area in Portland (Oregon) in censuses carried out by James (1953).

Some implications to be considered

1) Historical **instability of the great empires**

2) **Language** → establishes **hierarchies** and **instructions for behavior**

3) **Language** → more efficient than **grooming**, but still **precarious** and **unstable** to maintain social cohesion

4) "when we do want to establish **very intense relationships**, we tend to do so through the much **more primitive medium of physical contact** rather than through language" (p. 693)

5) **Lack of face-to-face interaction to provide cues for social decision-making**

6) **Contemporary societies** → increasingly based on **non-face-to-face contacts mediated through language** (**social networks**)

7) We are not **cognitively adapted** to think about **large-scale political issues**

8) **Lack of cognitive accessibility to deal with large-scale political issues**

9) **Nature of human political psychology**

10) **Paradox** → "**modern individuals** find politics intrinsically interesting. Yet, (...) **people lack knowledge of basic features of the political process** and the ability to form consistent political attitudes." (Michael Bang Petersen. Is the political animal politically ignorant? 2012)

- "the political animal is, by self-profession, politically ignorant."

- "**modern mass politics** often fail to activate **evolved mechanisms for social and political decision-making**"

- **Modern political issues compatible with basic human adaptive problems**:

    - immigration
    - social welfare
    - criminal justice

- **Modern political issues incompatible with basic human adaptive problems**:

    - economic policies; rules for decision-making in parliament
    - European Union
    - macro-economic policies
    - intergovernmental regulation

    - "Humans have **few if any evolved cognitive mechanisms** for processing such issues."

Table 1. Overview of key research on the evolutionary psychology of political attitudes and behavior

Modern Political Issue	Adaptive Problem (Issue is Processed by Mechanisms for…)	Illustrative Finding
Candidate Choice	Followership	Feminine political candidates are preferred in times of peace, masculine candidates are preferred in times of war (Little et al., 2007, 2012)
	Kin Nepotism	Political candidates that share physical features with an individual are preferred by that individual (Bailenson et al., 2008)
	Status Competition	Males' testosterone levels respond to election results such that males supporting the losing candidate experience a drop in testosterone (Stanton et al., 2009)
	Social Control	Individuals are more likely to accept decisions from individuals in positions of power if they have been granted rather than sought power (Hibbing and Alford, 2004)
Criminal Justice Issues	Punishment	People across very different cultures judge the relative seriousness of different crimes similarly and match the severity of the punishment to the seriousness of the crime (Robinson et al., 2007)
	Reconciliation	The social value of criminals determine whether third parties want to punish or rehabilitate them (Petersen, Sell et al., 2012)
Ethnic Relations Issues	Social Exchange	Ethnic homogeneity is a major cause of high levels of redistribution within societies (Alesina and Glaeser, 2004)
	Coalitional Psychology	Racial groups are processed by mechanisms designed for processing coalitions (Kurzban et al., 2001)
	Pathogen Avoidance	Pathogen load increases outgroup prejudice across countries (Thornhill et al., 2009)
	Sexual Coercion	Female outgroup prejudice is driven by fear of sexual coercion (Navarrete et al., 2010)
Social Welfare Issues	Social Exchange	Social welfare recipients are evaluated using mechanisms designed for cheater-detection (Petersen, Sznycer et al., 2012; Petersen, 2012)
	War of Attrition	Physically stronger males are more supportive of inequality (Price et al., 2010)
Reproductive issues	Mating	Attitudes on drug policy are more strongly influenced by mating strategy than by political ideology (Kurzban et al., 2011)
War	War of Attrition	Physically stronger males are more supportive of solving international conflicts using aggression (Sell et al., 2009)
	Competition for Mates	A surplus of young males increase the severity of wars (Mesquida and Weiner, 1999)

Notes: The first column lists different modern political issues that have been investigated from an evolutionary psychological perspective. The second column lists the domains of adaptive problems that have selected for the cognitive mechanisms that guide attitudes and behavior on the relevant political issues. The third column provides illustrative key findings from this research. The list of studies serves illustration purposes and, hence, is not exhaustive.

→ "Skepticism and **intellectual fragmentation** undermined the ancient hope that history could **empower us by helping us better understand the present**, and sapped confidence in the value of historical research." (David Christian. [What is Big History?](#))

→ Without the assumptions of the **theory of evolution** applied to the analysis of **political issues**, many complex political problems that we face today will continue to be seen in a fragmented and incoherent way.

Thank you!

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