POLITICAL COOPERATION

Physiognomic Similarity and Political Cooperation: An Exploratory Investigation

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Abstract. **Cooperation between politicians is often explained primarily by applying utilitarian concepts to coalition-building behavior. Usually, some direct or indirect advantage is held to be the main motive for cooperation, especially among those who are otherwise competitors. Drawing on sociobiological theory, this study presents an alternative approach in which truly altruistic motives may underlie and influence, as a biosocial substrate, even modern politics. This approach suggests that phenotypic similarities among individual politicians may play a role in the formation and stability of political alliances. To examine this hypothesis, physiognomic comparisons were made of the 65 delegates who gave speeches at the Nineteenth All-Soviet Party Congress of the Communist Party of the USSR, held in Moscow in 1988. The association between physiognomic similarity and expressions of verbal support was analyzed to test the hypothesis. Results suggest that speakers with faces more closely resembling that of the secretary-general were more likely to express verbal support for his policies than were others.**

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Comrades, delegates! How can we deepen and make irreversible the revolutionary transformation which has begun in our country on the initiative and under the direction of the party? This is the pivotal question which we, the delegates of the Nineteenth All-Soviet Party-Congress, have to answer. (Pravda, No. 181, June 29, 1988:2)

IT WAS THROUGH these impressive words that Mikhail Gorbachev, the unexpected newcomer at the head of the Communist party, opened a most important political conference in the former Soviet Union. In the course of his opening speech, which was a marathon presentation lasting several hours on two subsequent days, it became obvious that the secretary-general, as the official chairman of the party-congress, was firmly committed to winning support for his new political program from as many of the invited delegates as possible. Since all active participants (i.e., the functionaries who gave a speech during the conference) basically agreed with Gorbachev's ideas regarding both the necessity and the direction of social and political changes in the country, he was indeed successful. At least, no real opposition—neither with respect to the specific content of the proposed reforms nor concerning their realization—could be observed during the public sessions.

Gorbachev's apparent success was not surprising since, in cooperation research, it is well known, for both human and other primate species, that dominant individuals within a homogeneous group normally receive much more attention and interest than subordinates. This implies that coalitional and other cooperative

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behaviors are directed preferentially toward high-ranking individuals, even though individuals from lower ranks, by entering into an alliance with influential partners, may run the risk of being cheated regarding potential resources which, ultimately, are to be divided among "friends" (Alexander, 1974; Chapais, 1992; Cheney and Seyfarth, 1990; Dunbar, 1988; Harcourt, 1992; Noe, 1992; Silk, 1982; Zabel et al., 1992). Hence, many of the verbal references made by the majority of the speakers that expressed their political loyalty to the secretary-general were predictable.

Looking at the situation more closely, however, one could observe interesting phenotypic similarities between some of the active participants in the conference. In particular, it was striking that the specific physiognomy of party leader Gorbachev, like a sort of prototype, seemed to "reappear" in the faces of many other conference speakers. At least, this was the first impression one obtained by visually examining the photographic portraits of these persons and comparing them with Gorbachev's photo. Starting from this surprising observation, a distant kin factor (in contrast to conventional applications of the term "kinship") was hypothesized to provide an additional evolutionary explanation of the great amount of solidarity found between the party leader and the delegates. In cases of reciprocal altruism (Trivers, 1971, 1985), obvious direct advantages for cooperative individuals can be presupposed (e.g., in the present case, a later political promotion by the influential secretary-general). The payoff for altruistic behavior based on genetic relatedness, however, is more indirect—an increase in the donor's inclusive fitness (Hamilton, 1964).

To explore the kin selection hypothesis, which postulates—other things being equal—altruistic favoritism toward kin, this study examines the influence of phenotypic similarity on political solidarity and cooperativeness. As a measurable bias, such an influence should outweigh other more evident influences from both instantaneous mutual and delayed reciprocal rewards. The project started with a physiognomic comparison of the "normal" speakers at the party-congress with the face of the head of the party, that is Secretary-General Gorbachev. The second step was a comparative analysis of the content of the speeches themselves. As a measure of the readiness for cooperation, specific attention was paid to the occurrence of expressions of support within the speeches. The association between physiognomic similarity and verbal support was analyzed to test the hypothesis.

The validity of such an approach depends on the hypothetical assumption of real causal links between phenotypic (in this case, physiognomic) and genetic parameters. Support for the idea that physiognomy is a reliable indicator of genetic distances between individuals may be found in the widely-accepted morphological
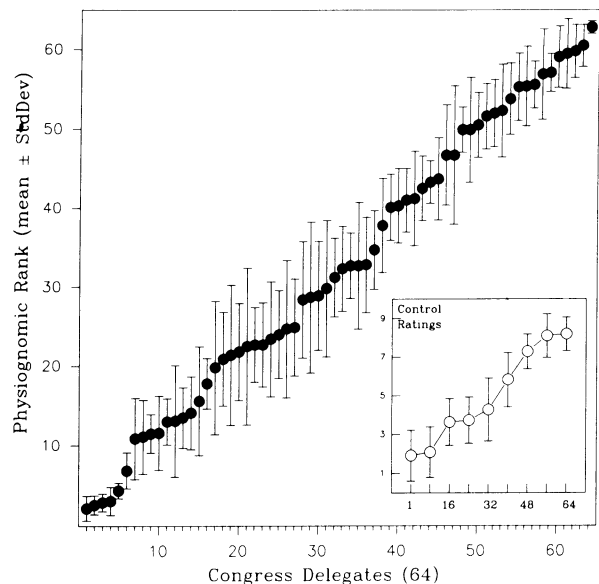

Figure 1. Final Results from the Physiognomic Scaling Procedure ("Face-Fingerprinting")

Note: The photographic portraits of sixty-four delegates were evaluated with respect to the physiognomy of the chairman of the conference (1 = highest, 64 = lowest, similarity to the secretary-general). Inserted graph: control ranking of 9 selected faces (original ranks: 1, 8, 16,..., 64) performed by 10 independent raters (note the change in the y-scale).

method in comparative systematic zoology. In addition, the latest results from developmental biology (see Jäckle et al., 1989; Lawrence, 1992) show that even very specific phenotypic characteristics emerging during late ontogeny are guided and controlled by influences exerted by the genome. From a plausibility standpoint, one could argue that the many thousands of living cells that produce a specific human face have no other possibility than to rely (even in their interaction with the environment) on their own genetic instructions.

The present study is only one within a series of diverse yet preliminary attempts to investigate political cooperation within the context of sociobiological theory. As such, it should be taken as an exploratory effort to examine new functional aspects of already existing interdisciplinary relationships between biological and political theory, inspired by the prospect of future unification.

Material and Method

All public speeches held at the Nineteenth All-Soviet Party-Congress of the Communist Party of the USSR (Moscow, June 28 to July 3, 1988) were subjected to analysis (65 talks given by the secretary-general and 64 delegates). All material was drawn from the German issue of the semiofficial Russian daily paper *Pravda* (published in Vienna, Austria on June 29, 1988). Each

Figure 2. Faces of the Sixty-Five Speakers at the Nineteenth All-Soviet Party Congress

of the oral contributions, which appeared in successive issues of the newspaper (Numbers 181-184), was accompanied by a photographic portrait of the speaker taken during his speech at the conference (black-and-white shots of head and shoulders; dimensions: 43 x 60 mm).

Physiognomic Ranking

The portraits of the delegates provided the material for the first step of the analysis, that is, physiognomic scaling. The method involved a type of visual "face-fingerprinting," with the face of the party leader (Secretary-General Gorbachev) serving as a physiognomic probe to compare with the photographs of the other speakers for coding similarity. A rough preliminary ranking was completed prior to coding. In order to avoid disturbing influences from artificial attributes, such as spectacles or specific haircuts, particular attention was paid to the lower parts of the faces (below the level of the eyes). This procedure was repeated ten times by the same person (the author), but on separate days (1, 3, 5, …). The result was a stable ranking list which allowed attribution of definite physiognomic ranks to the 64 faces, with 1 indicating the most resemblance to the leader and 64 the least resemblance (Figure 1; main graph).

A precautionary measure to improve reliability consisted of special pretraining using a variety of pictures of the secretary-general's face (30 photographs from diverse books and journals). Such training (repeated

inspection of the whole set of photographs; duration approximately 1 hour per day over 8 weeks) was thought necessary to minimize eventual biases due to unavoidable changes in optical perspective and, in addition, to counterbalance variances in facial expression (emotions, mimic intentions, etc.). Influences of facial expression on political behavior was not the theme of the study (cf. Masters, 1989).

To estimate intercoder reliability, an abbreviated form of control ranking was performed by ten independent persons. Nine selected faces (positions in the initial ranking made by the author: 1, 8, 16, 24, 32, 40, 48, 56, 64) out of the total set of sixty-four photos of delegates were ranked with respect to the picture of the secretary-general. The independent raters were told not to return the photographs until they were absolutely sure they had reached a definite ranking list. The results showed clear correspondences with the author's evaluation (Figure 1; inserted graph), although no special training was demanded for this much smaller set of photographs (aside from the advice to concentrate on the lower parts of the faces). Intercoder agreement (author included) was strong enough to accept the ranking as a control criterion for the initial procedure (Kendall Coefficient of Concordance: $W = 0.009, p < 0.001$).

Obviously, such a wholistic[1] method could not provide a precise measurement of physiognomic similarity. However, given the advantages of rank ordering as a robust sorting process (Harmon, 1973), and given the poor quality of the original photographic material used,

I consciously rejected more analytical (e.g. digitalized) techniques commonly applied in face recognition studies (Goldstein, Harmon, and Lesk, 1971). In addition, there is empirical evidence that face recognition is mainly based on a mechanism best described as "ensemble coding" (Rolls, 1981, 1986). This information encouraged me to apply the above alternative methodology—one that should result in a later refinement of techniques.

Selection of Parameters

This step consisted of a detailed examination of the contents of the secretary-general's opening speech. The aim was to determine suitable terminological indicators of political solidarity. The choice was guided by the importance the secretary-general attributed to specific words in his speech. Seven terms were finally chosen: *perestroika, reform, democratization, Lenin, party, socialism,* and *glasnost.* Both their programmatic and ideological character were easy to understand since the party leader explained their central importance for the conference during the introduction to his speech. In addition, except for the spirit of Lenin, which was omnipresent during the whole meeting, he discussed every notion and his own concept of it at full length in separate parts of the ensuing talk.

In order to broaden the study, three social parameters found in the speeches were added to the analysis. All three were assumed to provide potentially important additional information about the sociopolitical relationships between speakers and audience as well as among

the speakers themselves. The choice fell on the frequency of the public address "Comrades" made by a speaker, the occurrence of applause he obtained from the audience (indicated in the newspaper), and the chronological order in which the delegates appeared during the conference.

Data Collection

Data collection consisted simply of counting the frequency of the selected terms within the written speeches of the secretary-general and the delegates. Subsequent standardization to the number of occurrences per 1000 lines of printed speech (about 10,000 spoken words) provided the required comparability for the quantitative analysis. During counting, particular attention was given to the context of usage. A term was counted only when used in exactly the same, positive way it was used by the secretary-general. Except for the malleable notion of *glasnost,* which often was difficult to classify (see below), there was not a single truly negative interpretation of any of the slogans by any delegate.

In the final step, physiognomic data (similarity to the secretary-general) and the ideological and social parameters were analyzed in relation to each other. The measured frequencies of these parameters in the talks were compared with the delegates' physiognomic ranks. Regression analysis was carried out and correlations, along with potential trends, were examined.

Results

Terminological Parameters

The values of six of the seven selected political slogans were united into a single ideology-nucleus category (perestroika, reform, democratization, Lenin, party, socialism). This procedure was justified because these terms showed the same trend in the regression analysis which tested the correlation between physiognomic rank (i.e., similarity to the group leader) and effective ideological cooperativeness of the delegates.

The resulting plot of the individual values for each speaker against the physiognomic similarity scale yielded a clearly significant negative correlation (regression: *slope* = -0.845, *rho* = -0.333, *p* <0.01). In other words, the average probability that a speaker would utilize one of the specific terms from the ideology-nucleus clearly increased with the physiognomic rank he occupied (Figure 3). This demonstrates that delegates with faces more closely resembling that of the secretary-general were more likely to make group leader solidarity statements as a public demonstration of their readiness to cooperate than were delegates with physiognomically more distant faces.
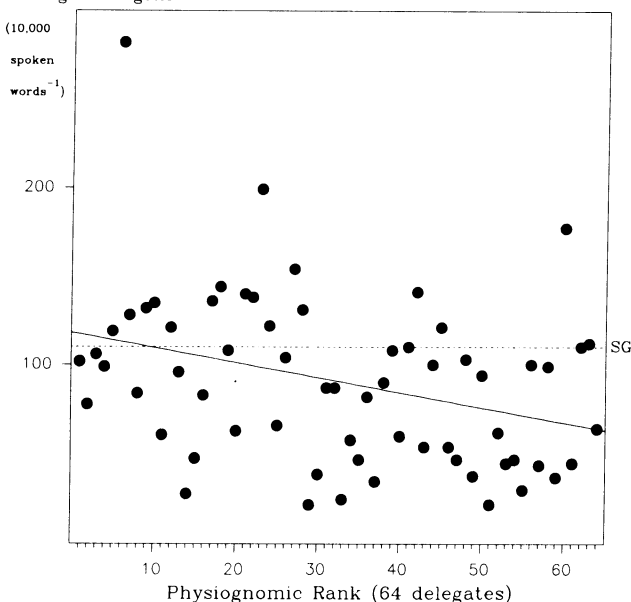
Ideological Slogans

Figure 3. Physiognomic Similarity (Rank 1 to 64) and Political Cooperativeness of the Delegates, Assessed through the Occurrence of Central Ideological Slogans (Perestroika, Reform, Democratization, Lenin, Party, Socialism) in their Conference Talks.

Note: SG = value for the secretary-general's opening speech

Table 1. Correlation of Terms within the Ideology Nucleus and Physiognomic Similarity

	slope	*rho*	*sig*
party	= -0.518	-0.275	$p < 0.05$
socialism	= -0.115	-0.282	$p < 0.05$
Lenin	= -0.085	-0.289	$p < 0.05$
democratization	= -0.063	-0.192	n.s
perestroika	= -0.054	-0.116	n.s
reform	= -0.030	-0.073	n.s .

As indicated in Figure 3, the negative correlation was shown by every one of the six terms composing the ideology-nucleus. Beginning with the most marked trend, the sequence shown in Table 1 was established. A comparison of the delegates' frequency values with Gorbachev's target value (SG: dotted line in Figure 3) shows a further, more concrete quantitative relationship. To a moderate extent, speakers of an elevated physiognomic rank were more likely to reach the high ideological level of the secretary-general. Concerning the frequency of use of slogans central to the debate, the lower ranks seem to have been either unable or unwilling to speak as "one of the party."

Glasnost, as the seventh slogan, was difficult to classify and yet undoubtedly represented one of the most provocative catchwords here. Like *perestroika*, this was a new terminological creation in Russian politics and is loosely translated as "openness," "frankness," or "transparency." Despite close attention to its context within the speeches, it was often unclear whether its use revealed the speaker's intention to publicly support the party leader or not. This lack of clarity, together with the lack of a clear trend in the data, led me to treat *glasnost* separately from the remaining six central terms. In fact, the frequency distribution pattern of *glasnost* revealed a quite homogeneous and equal use among delegates (regression: *slope* = -0.002, *rho* = -0.011, p = n.s.).

Social Parameters

The intended appeal of a speaker to the audience's solidarity by addressing them as "Comrades" was expected to be influenced by the physiognomic parameter. This hypothesis was based on the assumption that a physiognomically high-ranking delegate should be more likely to get away with this potentially risky exposure to the listeners, who might reject the reported ideas of their "comrade." The reason for such a privilege could be a higher probability of obtaining the support of the secretary-general. Although the data do not strictly confirm this idea, they do show a very slight tendency in the direction of the predicted negative correlation (regression: *slope* = -0.050, *rho* = -0.123, p = n.s.). An alternative hypothesis could postulate a greater necessity for the

speaker to address the group more familiarly if he is physiognomically more distant (L. Mealey, 1991, personal communication). The data neither fully exclude nor clearly favor such an assumption.

The data for the social parameter of applause earned from the audience allowed only a preliminary interpretation. The distribution pattern is best described as bimodal due to a significant re-increase in frequency in the lower physiognomic ranks (second order regression: *slope 1* = -0.519, *slope 2* = +0.008, *rho* = 0.240, p < 0.05). An interesting aspect is the possibility of attributing oppositional tendencies to this pattern of public solidarity. Such an opposition could have rewarded party-line dissent statements. This speculation, however, must remain inconclusive due to the lack of detailed information about the conditions both during and surrounding the conference, in particular about the specific composition of the audience (approximately five thousand conferees).

The sequence of the individual speeches provided the final aspect of the analysis. The results show a negative correlation between the timing of the talk and physiognomic rank (regression: *slope* = -0.160, *rho* = -0.160, p < 0.01). This negative correlation is surprising under the assumption that it was both an honor and a matter of influence for the delegates to have their turn soon after the secretary-general. One explanation for this finding could be the chairman's extensive opening speech, in which most of the relevant topics planned for the conference were discussed down to the last detail. Gorbachev's imposing speech (approximately 69,000 words; mean length of the delegates' talks: 4,340 ± 1,420 words = 6% of the opening speech) may thus have functioned as an overwhelming psychological and ideological initiation. Perhaps this allowed potential critics to advance within the sequence of the speakers without endangering the party leader's message. An alternative, more speculative interpretation could presume a systematic strategy involving speakers consciously occupying later timeslots in order to have the final say.

The Impact of Ethnicity

Factors other than physiognomy may have influenced the results obtained. One of the most likely alternative interpretations involves different ethnic origins of the speakers. Accordingly, differences in regional and/or ethnic solidarities could be a much simpler explanation of the measured trend for political cooperativeness. Ethnic origin in the strict sense was not specified in the *Pravda*; only information about geographical origin (in most cases, place of employment) and type of profession accompanied the speakers' contributions. I compared the results on physiognomic similarity (standard = physiognomy of the Russian Gorbachev) with these data. Professions were also analyzed due to a possible separate

Table 2. Ethnic Origin and Profession of Delegates

	Russia	Other Republic
Party secretary	15	18
Other profession	28	3

Ethnicity

Profession

Figure 4. Physiognomic Rank (1-64) Set in Relation to Ethnic Origin (place of employment; see text) and Type of Profession.

Note: Black bar = Russian delegate or Communist party secretary.

influence on political cooperativeness.

Two different classes of delegates clearly dominated the conference. Speakers from the Republic of Russia were more numerous than those from any other republic (67%). With respect to profession, the group consisting of party secretaries was most highly represented (52%). The quantitative relationships between ethnic origin and type of profession are shown in Table 2.

The party secretaries included delegates from practically all Soviet republics (12 at the time of the conference). Most professions not directly related to the Communist party involved important functions within the central administration of diverse Soviet organizations (e.g., the presidency of a committee, the head of an industrial organization, etc.). Only five representatives of the Soviet working people participated in the meeting as active speakers.

The delegates originating from Russia appear to be randomly distributed on the established physiognomic similarity scale (Mann-Whitney U, p = n.s.), whereas the party secretaries turn out to be clustered toward the left, that is, the high-ranking end of the scale (Mann-Whitney U, p <0.05; Figure 4).

The concentration of the political professionals (the party secretaries) at the high end of the scale indicates that physiognomic factors indeed played a particularly important role around the center of political influence—the secretary-general. On the other hand, one could not expect cooperativeness to be independent of ethnic influences here, since other studies have shown ethnicity to be an influential factor for human social behavior (van den Berghe, 1981; Campbell, 1965; Willhoite, 1977). However, for the following reasons the data (place of employment) that were used to establish the two main categories of ethnic origin must be handled with caution:

- Until Gorbachev's time, the functioning of the internal party mechanism can be circumscribed by the notion of a "democratic centralism" (Portisch, 1991). Thus, every party functionary had to be appointed by the Central Party Direction residing in Moscow (it is known that, especially in Islamic republics, the appointees often came from Russia).
- The Russian republic itself is far from representing one homogeneous ethnic group. On the other hand, there are often minor ethnic differences between some of the other republics (e.g., between White Russia and the Ukraine).

Discussion

The Evolutionary Approach

The main results indicate a subtle, yet significant, positive correlation between phenotypic similarity and political cooperativeness. In fact, physiognomic similarity may have influenced the readiness of the conference delegates to support the political ideas of the chairman. At least, this is true if one accepts the assumption that the frequency of ideological slogans used in the same positive manner during a public speech can be interpreted as a reliable indicator of political solidarity. Of course, professional lying is quite common in politics (as in other areas), and therefore an influence from that side cannot absolutely be excluded. However, it would be very difficult to explain a consistent trend by assuming perfect dissimulation which, in addition, would be related in some unknown way to physiognomy.

The present findings certainly add a new perspective—the existence of physiognomic factors underlying political solidarity and cooperation—to current studies on interpersonal attraction and group formation in social psychology (cf. Turner, 1982). But more interestingly, the results support the evolutionary hypothesis formulated at the beginning of the study. An interpretation based on the kin selection argument is suggested because the trend underlying the data is consistent with a basic axiom of contemporary evolutionary theory, namely, that there exists a relationship between genetic relatedness and readiness for altruistic investments (Hamilton, 1964). Should social reciprocity be

Physiognomic similarity may have influenced the readiness of the conference delegates to support the political ideas of their chairman, Gorbachev

considered as a logical alternative to kin-selected altruism? The presence of true altruism can be postulated since it would be quite unrealistic to assume influences from reciprocal interactions which, by pure chance, tended to follow the physiognomic similarity scale. Rather, it may be concluded that the opposite is more likely: the existing bias in genetic relatedness has produced an equivalent bias with regard to the delegates' readiness to invest in always-risky reciprocal cooperation.

Proximate Mechanisms

There are four possible mechanisms underlying kin recognition in animals and humans: direct genetic recognition through phenotypic markers (Blaustein, 1983; Getz and Smith, 1983; Hepper, 1983); spatial proximity (e.g., nest and offspring in some birds); acquired familiarity (Alexander, 1979; Barash, 1982; Essock-Vitale and McGuire, 1980; van den Berghe, 1981); and phenotypic matching (Alexander, 1979; Hamilton 1964; Holmes and Sherman, 1983).

Phenotypic matching is probably the process through which the measured interaction between physiognomy and cooperation was mediated. Phenotypic matching is basically a process whereby an individual organism performs both a qualitative and quantitative comparison of its own phenotypic characteristics with those of conspecifics. It involves the formation of different kinds of mental templates specifying self-identity. Such sociocognitive maps are thought to be learned by the individual in the course of its various interactions with the social environment, in particular during the early experiences within the nuclear family. The degree of matching or nonmatching of the features of a conspecific with such templates, under normal ecological conditions, reliably indicates both the probability and the amount of genetic relatedness.

In the present case, "physiognomic matching" would be nothing more than a special submechanism of the more general process of phenotypic matching, enabling humans to evaluate genetic relatedness to other conspecifics by using very specific physiognomic cues. Results from research on assortative mating in animals (Bateson et al., 1980; Bateson, 1982) and humans (cf. Mascie-Taylor, 1989; review in Mascie-Taylor and Boyce, 1988) support the view that physiognomic matching is active in both cases to select the best possible partner, be it "only" for sexual reproduction or for "higher" (e.g., political) purposes. This suggests that we move here on one single scale and that, with regard to the laws guiding the choice of a partner, politics is essentially nothing more than the social extension of what happens already in more private areas.

However, as a proximate mechanism, physiognomic matching could also be grounded in reciprocity. Following social exchange theory (cf. Hinde, 1979; Graziano,

1984), rewards can be understood as resources with a determinate "value" (Hull, 1952). Thus, a reasonable functional explanation of the present results could be given by the hypothesis that cooperation will be more efficient among partners who are similar. Since successful cooperation requires a very fine reciprocal tuning of complex behavioral strategies in space and time, any similarity between the individuals involved could favor optimal results. In particular, if behavioral traits are included, phenotypic similarity per se could be a valid explanation of cooperativeness among humans. Such an effect is not a contradiction to the genetic argument, but it must be added to it as a possible reinforcing factor.

Political Interpretation

The sociobiological model, if applied to our specific case, should also be able to explain some of the more hidden connections within the concrete political situation that was analyzed (as far as known to the international public):

● Before the putsch in August, 1991, Boris Yeltsin was commonly portrayed in the Western media as the major opponent and challenger of Secretary-General Gorbachev. On the similarity scale, Yeltsin held one of the foremost places (tenth). The dramatic situation of the putsch demonstrated a much more subtle relationship between the two supposed rivals.

● Mikhail Gorbachev, on the other hand, was regularly regarded as the great nonconformist innovator and convinced reformer of the whole political system. The fact that, in the present study, one of his most influential supporters (the declared conservative Jegor Ligatschow) occupied the first physiognomic rank, suggests a more differentiated view.

● One of the most active wire-pullers during the putsch (August 18, 1991), minister of the interior Boris Pugo (reputed to be an "egotist and icy-nerved politician"—Siegl, 1991), ranked thirty-eighth, in the second half of the physiognomy scale. Rather than conclude from this finding that the putsch was initiated by a true political opposition group, one could assume that a discontented subgroup dissociated itself from the too liberal attitude of the party leader.

Outlook

The correlation between physiognomic similarities and indicators of solidarity and cooperativeness within a political organization supports the idea that, in principle, it should be possible to apply the inclusive fitness theorem to even quite heterogeneous groups of people commonly held to represent "non-kin." The results suggest that factors associated with a potential increase in inclusive fitness cannot be excluded from being

behaviorally active over considerable genetic distances (which go far beyond conventional "kinship"; for a discussion of "genetic similarity," see Grafen, 1991). However, the causal intercorrelation among increases in inclusive fitness, increased certainties regarding partner reliability, and increased functional effectiveness of cooperation associated with enhanced phenotypic similarity (including behavioral similarity) makes it difficult to separate kin-based altruism from mere reciprocity. Only a comprehensive analysis of specific microaspects within human cooperation will allow a detailed resolution among these complementary explanations.

Notes

1. "Wholistic" in the sense of gestaltist categorization processes, whose advantages can be characterized as follows (Lorenz, 1973): parallel processing, richness in details, high efficiency, and robustness against external disturbances. In the words of Bateson et al. (1980): "In general, human observers seem to be better at making overall judgements about visual similarity when they do not focus on specific features of objects and instead attempt to take in whole patterns (see Goldmeier, 1972). The usefulness of abstracting particular features ... lies in communicating a description to somebody else."

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