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The Structural Evolution of Alliances

Why did the USA once arm and support Saddam Hussein of Iraq, a despicable tyrant who gassed his own people? Or the Mujahadeen of Afghanistan, who included Osama Bin Laden, against the Soviets in Afghanistan? The answer is to be found in equivalent sayings in many ancient cultures. In the book of Exodus (23:22) in the Old Testament it is written "I will be an enemy to your enemies and will oppose those who oppose you.". More cynically, in Book VI "The Source of Sovereign States" of the *Arthashastra*, written during the reign of the Indian Emperor Kautilya c. 250 BCE, probably by Kanakya, one of his senior advisors, it is written 'my enemy's enemy is my friend'. This simple phrase encapsulates the driving force for the solution of a triangle of relationships, in which the third relationship is conditioned by the previous two. While post-revolutionary Iran was seen as the export base of Islamic fundamentalism, the USA was happy to help Saddam fight the Iranians. A happy world would be one where there were no enemies: my friend's friend is my friend.

However, the world is not composed of only three actors: there are 192 members of the United Nations, linked in all sorts of extended networks of alliances in competing blocs. This network may be complicated both because of its size, and also because the actual relationships between pairs of states are not simple. In this paper we apply practically some of the ideas developed theoretically in our accompanying chapter (Risebro and Chapman 2009). In this short paper we do this by thinking about the first type of complexity, while keeping the relationships between states as simple as possible i.e. ignoring the second type of complexity.

Consider Figure 1, which depicts the six major players in South Asia in the early 1970s. A conservative monarch 'ruled' an unruly Afghanistan, which had claims to a Greater Pashtunistan, thereby claiming what are currently known as the tribal areas of Pakistan's Northwest Frontier. (This was a legacy of the British colonial past, when they imposed the 'Durand line' as the border between Pakistan, at the time part of British India, and a weak Afghanistan.) The USSR disliked its two theist Islamic southern neighbours. China and Russia fell out over a large range of ideological, trade and border issues. India and China were ideological rivals, and fought a bitter war in the Himalayas over disputed borders. Pakistan and India had by then fought three wars since independence in 1947, over Kashmir and over the foundation of Bangladesh. What of the USA? It had a primary goal – the containment of the USSR. It was ideologically opposed to China. It would have liked to be allied to India – the world's greatest democracy – but India adopted a semi-socialist path to development, was a leader of the Non-aligned movement (with Yugoslavia under Tito and Egypt under Nasser – both socialist states), and a friend of the USSR. Pakistan was happy to sign up with the USA

to bolster itself against India. To do so, it had to connive in American U2 spy-plane flights over the USSR. These were of monumental importance to the USA during the pre-satellite days of the Cold War.

This structure is connected – there is a chain of positive relationships linking any pair of countries – indirectly. Pakistan is linked with both China and the USA. Ultimately there is even the long path beyond China through Afghanistan and India to Russia.

But, the situations are not stable. For example, the USA's enemy China should not be a friend of the USA's ally Pakistan. The USA, China and Russia all mutually dislike each other. When the Serbs, Croats and Bosnians were in the same bitter triangle as Yugoslavia shattered in the early 1990s it was inevitable that two (it happened to be Croatia and Bosnia) would bury the hatchet, to unite against a now common foe, Serbia.

In 1972 Henry Kissinger, shortly before he became Secretary of State to President Nixon, was sent as a secret envoy to Beijing. He went via Pakistan. The USA and China came to a new cooperative understanding. This is the first edge marked as changing in Figure 1. China is now in an unstable relationship with Afghanistan over the hostility of Pakistan and the USA, both of them its allies. Interestingly, China, Russia and Afghanistan are in a stable relationship, so the China-Afghanistan edge has a complicated relationship within the diagram.

Figure 1 is the same as Figure 3a in our earlier chapter, except that now country names have been substituted for the letters of the nodes. In that earlier chapter we show how the idea of changing the sign (positive to negative or vice versa) of the most unstable edge in any network, will almost certainly lead to its break up into competing alliances. If we follow this logic, and change the China-Afghanistan edge, the result is great instability on the Afghanistan-Russia edge, which now has wholly hostile triangles completed successively by China, by the USA, and by Pakistan; and the last triangle with India is also unstable, because from the USSR's and India's point of view "my friend's enemy is my friend" – which is not what the Artashastra recommends. The 'solution' to this tension is the Soviet invasion of Afghanistan in 1979, and a change of government in Kabul, and therefore a change in Afghanistan's official external relationships. The new pattern of two opposing alliances as shown in Figure 2, analogous with Figure 3b in our earlier chapter, is stable.

The iterative procedure we apply actually has to contend with the fact that two edges can be equally unstable – but only one is to be changed. In Figure 1, two edges are equally unstable at the beginning –China-US and the Russia-Afghanistan. So, if we allow the model to change the latter edge first, then the Russians invade Afghanistan, then China changes its relationship with Afghanistan, then finally Kissinger goes to Beijing. The result is still the same opposing alliances.

The point is NOT to say that we can model history or predict history, but to reflect on other questions about historical dynamics. Is history a unique narrative where, if the temporal order of two events is changed, the result is always different? We are simply suggesting that in some circumstances there may be complex structures that lead some dynamics to the same ends even if in different sequences. In this case Henry Kissinger (or whoever else) may think they are making some bold new stroke, but actually they are reactionary agents following the logic dictated to them by the structure around them. In some sense the obvious master-stroke to solve South Asia's problem is to mend the relationship between Pakistan and India. Figure

I have something to say about that too. Just by looking at the diagram there is nothing to suggest that the edge Pakistan-India is anything remarkable. However, as Figure 4b in our previous chapter shows, this edge starts with *all* its associated four triangles stable. It is remarkable in this regional context – as significant regionally as the Russia-USA edge was globally during the Cold War. Further, it is evident that where cooperation and competition operate simultaneously, it is likely that blocs of opposing alliances form, where the cooperation is within the blocs, and the competition between the blocs. If we are modelling the merging of companies, there are rules which state that the alliances or cabals should compete in the market place. Unfortunately, international relations are in many senses anarchic, where military force may still be used in pursuit of political objectives. (No change since Clausewitz, then.) The military option is not a feature of our model, but our model can pose questions about what happened next. Again the option was regime change in Afghanistan. The USA and Pakistan *and* China (and a few others like the UK) all aided the revolt against the Soviet invasion.. The Soviet failure in Afghanistan was a major element in the collapse of communism and the USSR itself.

A second example concerns the current (January 2009) confrontation in the Middle East. In this case in Figure 3 we use nine ‘players’ - Iran, Israel, Lebanon (official government), Hizbollah, Syria, Jordan, the Palestinian Authority (West Bank), Hamas (Gaza), and the USA. Our best attempt at giving values to the current relationships is shown in Figure 3a. In this pattern the Palestinian Authority is shown as hostile to Hamas (and vice versa). This pattern of +1s and -1s already defines some deep patterns. In Figure 3b we show the stability values implied for each edge. Two edges have maximum stability values – i.e. USA-Israel, and Iran-Hamas. Two most unstable edges are Syria-Jordan, and Hamas-Palestine. Applying our criterion for the ‘evolution’ of the network, that is changing the sign of the most unstable edge at each iteration, results in the expected partition into two camps. One of these camps is Hamas-Palestinians-Syria-Iran-Hizbollah. Barring the Palestinian Authority, which many commentators believe to be a puppet administration of Israel, this list is a coalition of states and an organization branded as ‘terrorists’ by the USA. . Israel is hopeful that its current campaign will not result in Hamas and the Palestinian Authority joining forces: but outside commentators do wonder whether or not this is a likely outcome.

We repeat that we recognise that international relations are much more complex than these simple values, but space prohibits us from displaying analyses which complexify the relationships. The way in which solutions’ are found in the real world are also very different, in that the idea of there being a global overview to select the most unstable edge is also unrealistic. Instead, any player at any time may try and change a position to its own advantage.

We have used our model to examine this proposition. It comes up with a surprising and puzzling result. The procedure is simple: choose a node at random, and change the sign of that edge from that node which has the greatest instability. Figures 4 and 5 show the results of two runs of nine hundred iterations each, from the same starting values of Figure 3, but randomly selecting different nodes, whose maximally unstable edge is flipped. Points at which Connectivity goes to zero are points where disconnection occurs. We use something called a Q-vector (Atkin, 1974 and 1977, Chapman, 1984) to look at the pattern of connections, and we show the Q-vector for the iterations of Figure 6. This shows that at those moments Hamas is totally isolated. The bigger group is not stable: the stars indicate friends, and the vertical lines indicate when there are friends in common, both directly and indirectly. Stars that go beyond the vertical lines, for example Jordan and Lebanon have two each,

indicate that they have friends that are enemies of other of their friends. So the big group has not formed a local heaven against the 'expelled member'. What puzzles us is that, although random numbers are used and the history of changes is clearly different, and no edge is privileged in the network, the same partition occurs each time. In the second run the history is clearly different, yet it is the same partition that occurs.

We are not claiming that this model is prophesying what is going on in the real world. But it is asking questions about how and why events repeat themselves. In the broadest terms it is inviting us to investigate the deep structural properties of these networks further. It is perhaps a lesson that some politicians also need to learn.

References

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Figure 1 Relationships around South Asia, early 1970s

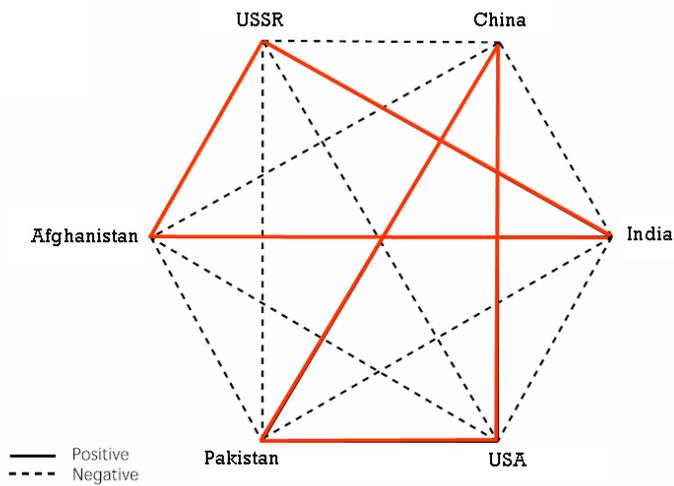
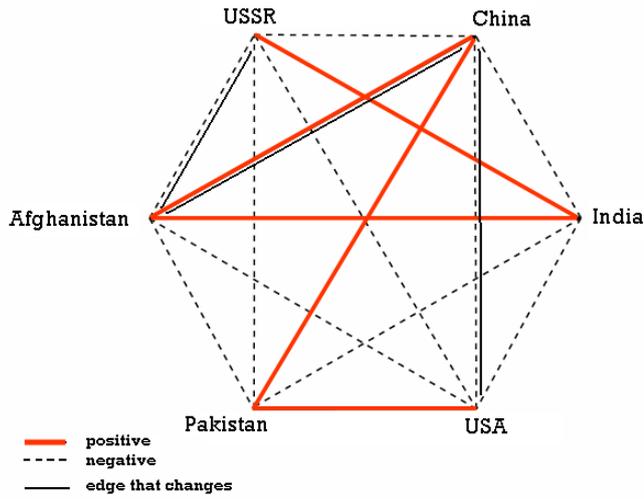


Figure 2. Resolution of instability in Figure 1, and actual relationships in South Asia early 1980s

	Ir	Le	Hs	Pa	Sy	Is	Us	Jr	Ha	Ir	Le	Hs	Pa	Sy	Is	Us	Jr	Ha
Iran	0	1	1	1	1	-1	-1	-1	1	0	-1	7	3	3	5	5	1	5
Lebanon		0	1	1	-1	1	1	1	1		0	-1	-1	-3	-1	-1	-1	-3
Hizbollah			0	1	1	-1	-1	-1	1			0	3	3	5	5	1	5
Palestine				0	1	-1	-1	1	-1				0	3	1	1	-1	-5
Syria					0	-1	-1	1	1					0	5	5	-5	1
Israel						0	1	1	-1						0	7	3	3
USA							0	1	-1							0	3	3
Jordan								0	-1								0	3
Hamas									0									0

Figure 3a Starting Values for Mid-East relationships

3b Starting stability value in Figure 3a

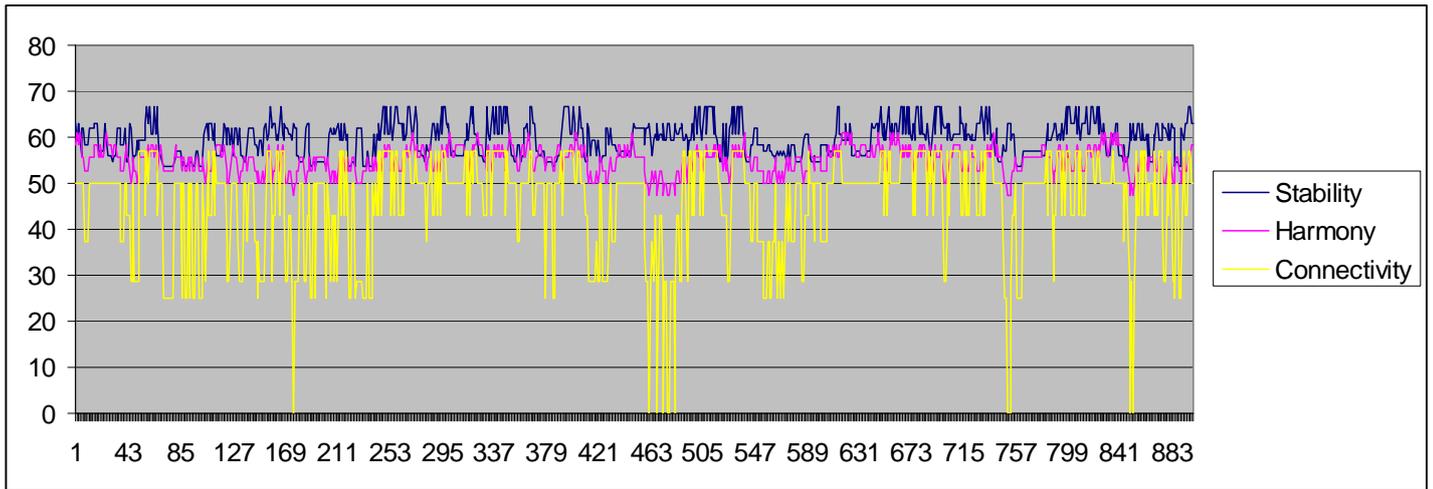


Figure 4 Stability, Harmony and Connectivity values for 900 iterations starting with values as in Figure 3a. At each iteration a node is randomly chosen, and its maximally unstable edge has its sign changed.

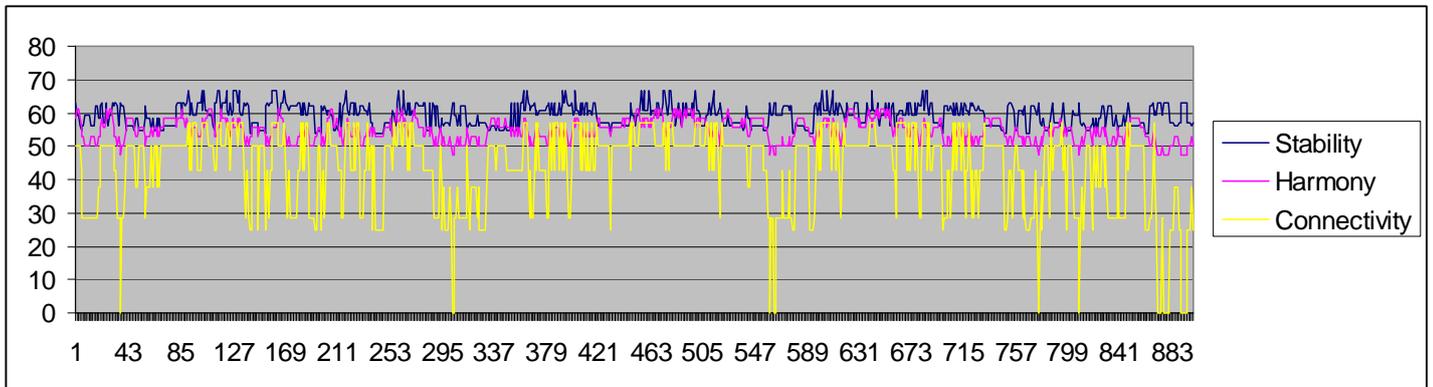


Figure 4 Stability, Harmony and Connectivity values for a second run of 900 iterations starting with values as in Figure 3a. At each iteration a node is randomly chosen, and its maximally unstable edge has its sign changed.

Iteration 36 Stab 63.1 Harm 47.2

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Le      *****
        IIIII
Pa      *****
        IIIII
Sy      *****
        IIII
Ir      *****
        IIIII
Hz      *****
        IIII
Is      *****
        IIII
US      *****
        IIII
Jr      *****
Ha      *
  
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Figure 5 The Q-Vector for all points in both Figure 4 and Figure 5 where connectivity is 0.