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Title

The use of formal methods to map, analyze and interpret *hawala* and terrorist-related alternative remittance systems

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Background

Alternative informal remittance systems are not "informal" but highly formalized through means such as local contracts, kinship and marriage, friendship, common business arrangements, partnerships, ethnicity, and other means of institutionalizing trust (such as religion). They are only "informal" in the sense that they are not modern Western banking networks and organizations.[1] They are also not "alternative" insofar as before the emergence of modern fiduciary institutions, they were the predominant remittance system. In many parts of the world, they still are today. They have persisted because they are fast, relatively inexpensive, and reliable.[2] Modern communications have made them faster, less expensive, and more reliable. Jost and Sindu (2000) provide a contemporary example:

> Hawala works by transferring money without actually moving it. In fact 'money transfer without money movement' is a definition of hawala that was used, successfully, in a hawala money laundering case. An effective way to understand hawala is by examining a single hawala transfer. In this scenario… Abdul is a Pakistani living in New York and driving a taxi. He entered the country on a tourist visa, which has long since expired. From his job as a taxi driver, he has saved $5,000 that he wants to send to his brother, Mohammad, who is living in Karachi.... Even though Abdul is familiar with the hawala system, his first stop is a major bank. At the bank, he learns several things: The bank would prefer that he open an account before doing business with them; the bank will sell him Pakistani rupees (Rs) at the official rate …of 31 to the dollar; and the bank will charge $25 to issue a bank draft. This will allow Abdul to send Mohammad Rs 154,225. Delivery would be extra; an overnight courier service (surface mail is not always that reliable, especially if it contains something valuable) can cost as much as $40 to Pakistan and take as much as a week to arrive. Abdul believes he can get a better deal through hawala, and talks to Iqbal, a fellow taxi driver who is also a part-time hawaladar. Iqbal offers Abdul the following terms: A 5% 'commission' for handling the transaction; 35, instead of 31, rupees for a dollar; and delivery is included. (Jost and Sindu: 2000:1).

Jost and Sindu observe that "this arrangement will allow Abdul to send Mohammad Rs 166,250. The delivery associated with a hawala transaction is faster and more reliable than in bank transactions. He [Abdul] is about to make arrangements to do business with Iqbal when he sees the following advertisement in a local 'Indo-Pak' newspaper" (Jost and Sindu 2000:1):

> cheap tickets to India, Pakistan, Bangladesh, Sri Lanka, Dubai, great rupee deals (service to India and Pakistan), large movie rental selection, video conversions, latest Hollywood hits on CD and cassette, prepaid international calling cards, pager and cellular activation (trade-ins welcome). [It stipulates that it is] conveniently located in Jackson Heights. Abdul calls the number, and speaks with Yasmeen. She offers him the following deal: A fee of 1 rupee for each dollar transferred; 37 rupees for a dollar; and delivery is included.

This scenario yields a transferred amount of Rs 180,000 – a saving of Rs 25,775 over the bank rate. Of course, the delivery charge is saved as well.

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[1] There is abundant evidence that modern fiduciary systems emerged out of these systems through a process of structuration. See Berkowitz (1975).

[2] Jost and Sindu argue that "hawala 'works' - or competes effectively with other remittance mechanisms - because of its cost effectiveness. A secondary consideration is that hawala is often related or even integral to existing business dealings" (Jost and Sindu 2000:1).

These methods are called "hawala" or "hundi" networks and are institutionalized and utilized among Indians (and Parsees), Pakistanis, Saudis, and much of South Asia and the Mid East. Originating in India, hawala means "in trust" in Hindu (in Gujarati, hawalo; in Iranian, havala); is slang for "in the air" in Urdu, and in Arabic means "change," "transform," and "bill of exchange." "Hundi" comes from a Sanskrit root meaning "collect" and is also used to refer to collection boxes in Hindu temples. Alternative remittance systems used by overseas Chinese with fundamentally similar methods of transfer without movement include the deposit shop (kuei-fang) and the gold or silver shops (chin-yin p'u).[3] In the West, the units of transfer without movement systems were historically referred to as "merchant banks" because, among other things, they operated banking on commercial credit. There were two fundamental forms: that of the Church-connected banks (the "pope's usurers") and the networks among Jews and Syrians. Church-related banks (e.g., the Medici and the Fuggers) relied on ties between the principals and their children or trusted employees' children to ensure transactions (De Roover 1948, 1963; Ehrenberg 1928). This worked reasonably well, but these banks had an unfortunate tendency to lend too much money to the unscrupulous rulers in Europe. In the case of the banking branch of the Medici family (for whom 15,000 bundles of bills of exchange along with other records are in Baker library at Harvard), this was their historical undoing (De Roover 1963). The same thing happened to the Fuggers in the 16th century (Ehrenberg 1928). The Jews and the Syrians, however, structured their networks through careful, dynastic marriages. These tended to be so successful that if they were nominal Christians (as in the case of the Mendes; Roth 1969, 1970), their daughters' hands in marriage were some of the most desirable and sought-after by European nobility. [4]

Effective contemporary remittance networks tend to be institutionalized through one of many forms of kinship. If one understands the fundamental principles involved, it is possible, although difficult, to track transactions among them. Although most modern research into these networks has been geared toward understanding their use for money laundering or terrorism, this is only a tiny proportion of all transactions they undertake. The hawala networks succeed in disguising illegal transactions precisely because the total volume of transactions is so large.
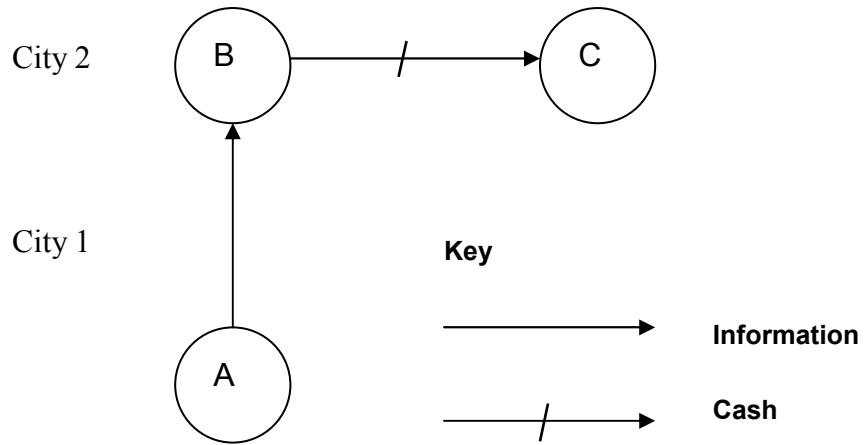
The structure of a transaction

While they vary somewhat in shape and structure, the basic transaction is the same: if "A" is in city 1 and s/he wants to convey something of value to "C" in city 2, A issues an instruction to his/her correspondent in city 2, let's call him "B," to pay "C" the specified amount by charging it against his/her account. This is represented in Figure 1.

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[3] These are sometimes confused with the "chop" (to cheung) employment of verification seals, which is not a transfer without movement system. On Chinese remittances, see Gambe (2000) and Christiansen (1997).

[4] This was explicitly true of Doña Gracia, the younger (Roth 1969).

Figure 1: Structure of a Transaction in a Traditional Remittance Network

City 2

B → C

City 1

Key

A

→ Information

→ Cash

The structure of a single transaction in these networks is deceptively simple. Anything of value may be involved: A, the remitter or sender, conveys information to his "correspondent," B, to carry out his instructions. This information may be in an email message, a traditional letter, a hand carried note, or even a coded phrase embedded in a letter inquiring about such mundane details as C's mother's health or whatever else (example: "Have you received the leaves for the tea back from Schaffir and Company?"). Unless you know the forms of messaging conventionally used by a given pair, these are almost impossible to detect and interpret by themselves. To return this money to A, it is either paid by C to B or remitted by C to A through his correspondent D, as shown in Figure 2, א (alef) and ב (bet), below. The course shown in ב2 is usually followed when the remittance is joined to a commercial transaction or when it is decided to take advantage of differences in the exchange rate between the currencies in city 1 and city 2.
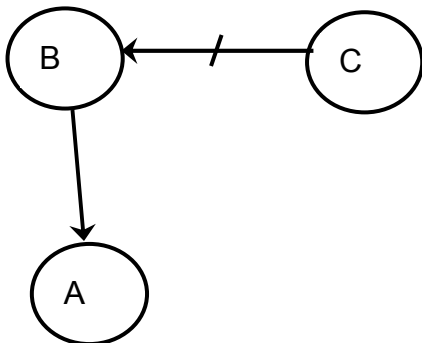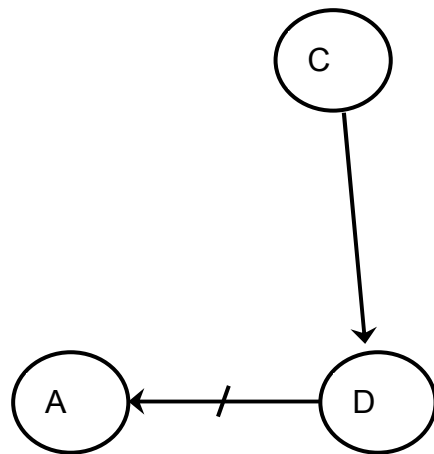
Figure א2

B ← C

A

Figure ב2

C

A ← D

The number of possible such interactions in a given remittance network of N nodes is N(N-1) and the number of sequences $2^{N \cdot N}$. Thus for, say, a fifteen node remittance network we would have 210 potential interactions and 2^{225} potential sequences of transactions. As Anatol Rapoport used to say, this is a large number. The density of ties in a network, D, is given as

$$D = 2A / N(N-1)$$

where A is the number of actual ties in a network, and N is the number of nodes.

In highly dense networks, such as the one given in Figure א3, the environment is rich in information and trust is institutionalized over time. This is particularly true of networks such as medieval Jewish trading networks, which were institutionalized through marriage (Roth 1969, 1970; Poliakov 1977). This yields very regular structures (Lorrain 1975). All groups use some mechanism like these: ties between fathers and sons, round-robin partnerships, and so on. The point is to truly institutionalize these ties over time so that it becomes virtually impossible for members of the network to take advantage of one another.

Figure א3 is drawn roughly, by hand, to illustrate what might be known at a given time about a hawala network. The solid circles overlie directive commodity-flow lines, and their size is an indication of quantity. Simple directed lines indicate directive information. Directed lines with a single crosshatch indicate directive currency flows. Let us assume that someone was a member (node) of the network shown in Figure א3 and let us propose that this network is maintained through a series of overlapping partnerships. Let us further propose that the person in question wished to embezzle money rather than remitting it to α or crediting it to α's account. Since the person is a member of α's partnership and s/he is a member of theirs, it is almost impossible to conceal the discrepancy, especially if α's son is married to the person's daughter and working in his office.[5] Moreover, if α is able to earn a higher rate of return on invested capital, the person might actually make less money by embezzling it than he would by sharing the profits. To attempt to calculate this for 2^{225} potential transactions, as Harsanyi (1963) proposed, would be computationally impossible. It is simpler not to try. This adds to the level of institutionalized trust (see Greif 2006).

Note here that node α is at a central point in the network, either because it enjoys the most favorable rates of exchange or is the point of origin of most of the transactions. Like 14, β is at the point of origin for many of the goods being shipped, by value. So, if the cash influx here is in US dollars and the main commodity being shipped is crude oil, α might be in New York (petrodollars) and β might be in Riyadh; 9 might be in London and 10 in Zurich; 15 might be in Egypt and the commodity inflow there might be in dates.

National banks have difficulties tracking these transactions because, as a rule, cash or funds are not actually sent between countries, but simply as coded information about commodities with stated values. Some of these are "dry" transactions in which no commodities are being shipped. They are, in effect, loans. Some are "wet" transactions in which only goods are being sent. These goods are of a stated value and represent a good way to refresh correspondents' accounts.

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[5] It is common to dower daughters with a piece of the business under these circumstances as well. So your son-in law is also your partner, to some extent, and you may be his father's or mother's partner, as well.

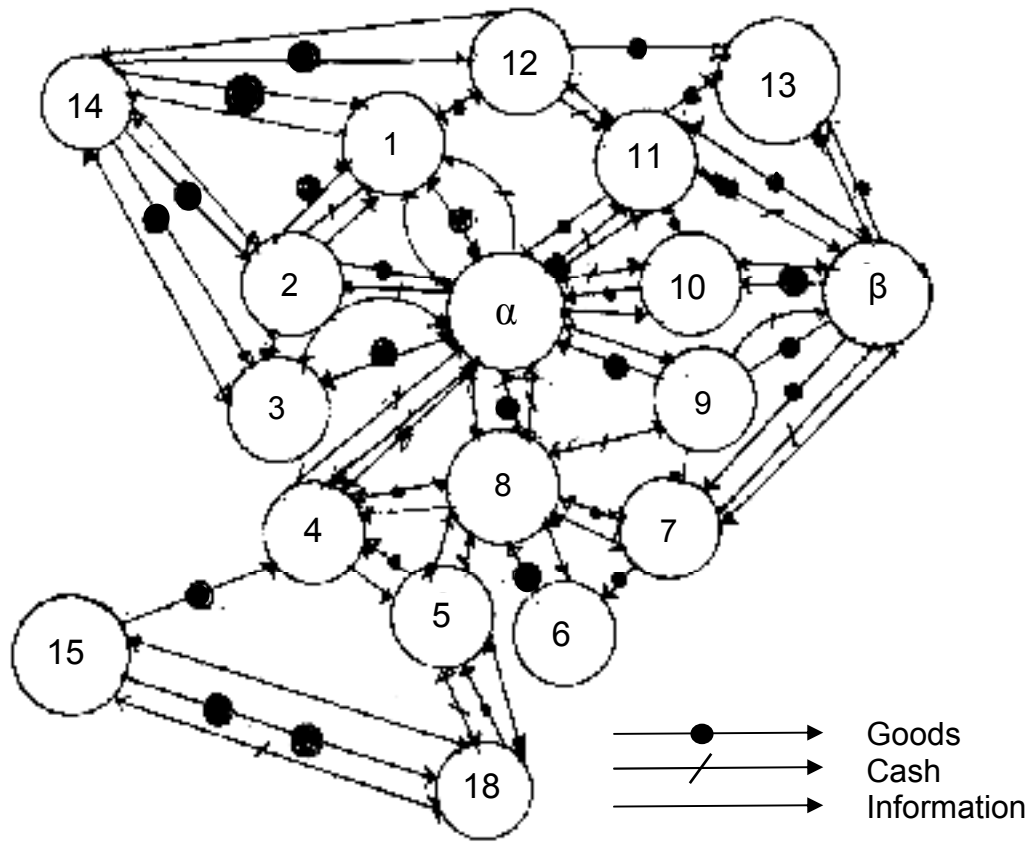Figure ℵ3 Stylized Network Showing Flow of Information, Goods and Cash

Figure ℶ3 Flow of Information in Hypothetical Network)

	α	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	B
α		1	0	1	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
1	1		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2	0	1		1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
3	1	0	1		0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
4	1	0	0	0		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0		0	0	1	0	0	0	0	0	0	0	0	0	1	0
6	0	0	0	0	0	0		0	1	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0		1	0	0	0	0	0	0	0	0	0	0	1
8	1	0	0	0	1	1	1	1		0	0	0	0	0	0	0	0	0	0	0
9	1	0	0	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0
10	1	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	1
11	1	0	0	0	0	0	0	0	0	0	0		1	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	1		0	1	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	1
14	0	0	1	1	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	1	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0
18	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0		0
B	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	

All these networks get seriously out of balance between any two points at some time. When this occurs, correspondents' accounts have to be refreshed by an actual

infusion of something of high value. Common modes of refreshment include gold bars, diamonds, bearer bonds, and Singapore dollars (SDRs). This has the disadvantage that, as in medieval times, couriers can be hijacked. "Dry transactions" are simpler to carry out and consequently faster because no goods are being shipped. The Internet has made these almost instantaneous. Normal transactions (which are neither "wet" nor "dry") are really commercial loans for the shipment of goods and take place within specified periods, e.g., 90 days.

Mapping Alternative Remittance Networks

The stylized form in which a rather simple remittance network was drawn in Figure א3 is created in such a way as to conceal its structure. Note, even at this point, we can make some sense of the details of this graph: 1 receives information only from α. S/he receives cash directly from 2 and α, and indirectly from 4, 5, 8, 9, 10, 11, 13, and 15. Person 1 is clearly the banker; α is a central organizing figure; and β simply ships goods and receives cash. S/he is not a player in the alternative remittance network unless s/he is engaging in "wet" transactions. If s/he were, s/he would not be likely to be restricted to these functions. 14 sends goods only to 1, 2, 3, and 12. Three of these, in turn, send goods to or exchanges goods with α. We would speculate from this that much of 14's revenue is in the form of entries on α's books. 13 only receives goods. How s/he pays for them remains problematic.

These kinds of observations, while interesting and motivating, are not systematic. To transform this graph into something analyzable, there must be a method that treats the network as a whole rather than piece by piece. Figure ב3 shows this same network, but for the directive information ties only, as a binary matrix. Other matrices can show the directive commodity flows and the directive currency flows.

The network shown in Figure ב3 is far sparser and more understandable than it would appear as part of Figure א3. Note that the rows and columns corresponding to nodes 16 and 17 are zero-filled. This is because they have been mentioned in "network chatter," but we have no concrete evidence of where they might fit. As their ties become clear, they will be added. The same simplification into matrix form can be done with cash-transfer ties, and commodity flow ties. To code the transactions of a node as "wet" requires that they be in the commodity flow chains or sectors of the network and in both sending or receiving roles. Knowledge of target cities should help in this regard. To code "dry" transactions, it is necessary that a given node both send and receive information as to fund transfers.

Once these separate matrices have been constructed and understood they can be superposed – literally, placed over one another. These superposed networks should provide a detailed picture of a complex role structure. Networks of this kind desperately need blockmodeling (Lorrain and White 1971; White, Boorman and Breiger 1976), which consists of clustering on an unconventional typology that puts together nodes performing the same function vis-à-vis the network as a whole. A hypothesis about the network is developed that relates to how to define this function so as to produce the typology. The network, in the form of a matrix, is then compared in detail to this hypothesis and a new, reduced network created. There is some disagreement as to whether the presence of lawful ties is more important (where allowed by the model) than

the absence of unlawful ties (where not allowed by the model; see Burt 1992 on "structural holes") in defining a structure. There is also some disagreement on what degree of lack of lawful ties or presence of unlawful ties is permissible. Because the network in Figure ℵ3 is a snapshot of a structure in time, it is static, and is missing counterbalancing exchanges in some cases because of time delay. There are also missing numbers for nodes. This indicates that we think that several nodes are missing. These missing nodes are most likely to be senders and receivers of cash and goods since intermediary nodes are a prominent feature of this network. Even though it is small, this stylized network is confusing until reduced to matrices and blockmodeled. Imagine reducing the larger hawala networks of some 200 to 300 nodes in this fashion without taking a formal and algorithmic approach. Simple inspection of an example is anything but simple.

Networks in which there are both funds-flow and goods-flow channels are common. The principle is simple, however: all channels for the flow of funds should have reciprocal channels for the goods, as they would in a perfectly orderly world. This is not always the case, however, as in example in Figure ℵ3.

Detecting Funds Transfers

The funds transfers used to remit funds to terrorist networks and for other illegal purposes, such as money laundering, will appear in these networks as unbalanced (non-reciprocal) flows. In a 4-channel network with goods and cash flowing in each direction, a "dry" transaction might be one where an instruction is sent to remit funds to a third party and to expect no return flow of goods. "Dry" transactions are somewhat simpler to detect but "wet" are more common. In "wet" transactions, goods may simply be shipped from A to B, sold, and the proceeds given to C. This may take two forms. Let us assume that A is in Saudi Arabia and ships oil to an importer in the US. Oil is shipped, no reciprocal cash flow occurs, and the oil is sold and the proceeds remitted to a terrorist in the US. The more subtle form of this same transaction is this: let us assume that the world price of Saudi Arabian sweet crude is $20 per barrel. Oil is shipped to the same broker in New York and it is valued at $10 per barrel. The profit from "wet" component in the transaction, which can then be transferred again, is the difference between these two. Even this is not perfectly transparent, however; where the network is structured as a series of overlapping partnerships, $10 per barrel might simply have been transferred to the receiving partner's account in Saudi Arabia. As the volume of such transactions goes up, it is more and more likely, however, that a form of transfer is happening.

In order to detect the illegal or terrorist transfers, we need considerable detailed knowledge of the forms of signaling and conventions of pairs of nodes in these networks. So, on the surface, our problem is somewhat simplified: in general, we do not need to know anything more than where node pairs fit into the larger network. The actual transfers of funds in which we are interested will take place between a limited number of pairs. Thus, we must first map the entire network. Second, we must winnow out those pairs most likely to be engaged in the transactions in which we are interested from the others and only then study them in detail.

We note, again, that these remittance networks are based on institutionalized trust—often through kinship.[6] This trust will be stronger and more closely institutionally hedged in cases in which illegal or questionable transactions are being undertaken. In most cases, we suspect the transactions are sheltered by marriage ties.

The way this works is at some point in time "A," a merchant in New York, has a son who is about 20 years old. B, his brother or cousin in Amman, has a daughter about 17 years old. B very seriously restricts his daughter's social contacts. It is a matter of family honor that his daughter is a virgin, as befits a middle class (as opposed to working class or peasant class) girl. A and B are frequently in trade with one another. A sends his son to "study the business" with B. The son lives in B's house, works with him in the shop, and may even maintain the financial records. In this time, the young people see virtually no one else their own age. After a year or so, the boy goes to his uncle or cousin and asks for his daughter's hand in marriage. Everyone acts very surprised.[7] In the tightest form of this model, the one followed by medieval[8] Jewish merchants and some Islamic merchants today, B's daughter is dowered with a share of her father's business. Thus, B's son-in-law is his partner, the man who keeps B's books, and his partner A's son as well. And as A is a brother or cousin of B, then B's son-in-law is a nephew or cousin's son as well. Both A and B have no greater assurance than this that their trust will not be misplaced.

From our point of view this is interesting because it means that we should give nodes joined by kinship ties in general and marriage ties, specifically, special attention. We will be aided in identifying them by superposing the kinship network over the general remittance network and utilizing the p-graphs developed by White and Jorion (1992 1996; see also Harary and White 2001, White and Houseman 2003) to understand the

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[6] Jost and Sindu observe "The components of hawala that distinguish it from other remittance systems are trust and the extensive use of connections such as family relationships or regional affiliations. Unlike traditional banking or even the 'chop' system, hawala makes minimal (often no) use of any sort of negotiable instrument. Transfers of money take place based on communications between members of a network of hawaladars, or hawala dealers."

[7] In New England they had a custom called "bundling" to help the process along. Male and female cousins would be brought together on weekends and put into the same bed with a bolster down the middle. Such bolsters were said to be the lowest barriers in human history.

[8] Medieval and early modern merchants issued their instructions in the form of what were called bills of exchange" (see Herlihy, Lopez and Slessarev 1969, Mansfield 1922). Since these, when accepted, were promises to pay at a time certain ("usance") they became commoditized. When large merchants (e.g., the Mendes, the Medici, and the Fuggers) put them together into a basket of bills in which people could invest, they became monetized. The Medici and the Fuggers even issued currency ("one Medici" or "10 Fuggers") based on these baskets. This is how the commercial banks (which emerged out of merchant banks) began issuing a currency. Many of these bills of exchange are still extant. The Medici collection in the Basement of Baker Library is magnificent, although somewhat dusty. It includes some 15,000 *bundles* of bills of exchange. There are small (3,000 to 4,000 bills) collections of the Fuggers' bills; a large proportion of which are the bills the Gradis family issued to finance New France.

The mechanism of the bill, itself, is much older than these. There are references to bills of exchange in the Babylonian Talmud at the time of the Sura School. The school was founded by "Rav" (Actual name: Abba Arikha), who died in 247. The Babylonian Talmud was compiled and edited in the early 6th Century. Contemporary remittance networks do not keep track of their transactions as neatly and in such detail (see Desbordes 1938, Goza 1997, Hourani 1992, Winder 1962).

role of kinship in the remittance network and to identify the tightest pairs. As long as one is able to identify one member of one of these pairs, s/he can begin to winnow out the entire network.

Figure 4: Generalization of the Transactions Shown in Figures 1 and 2
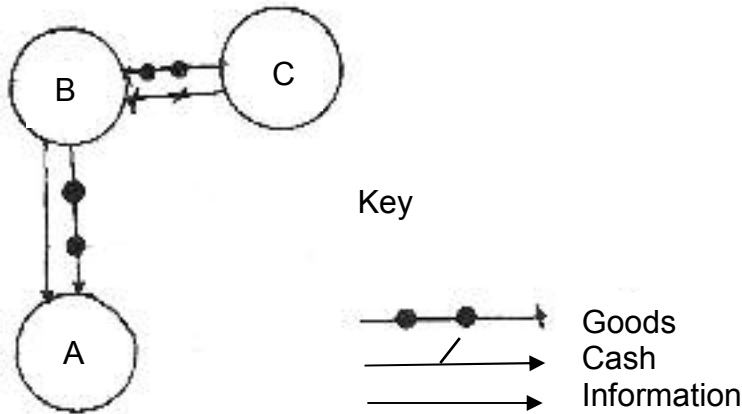
In Figure 4, the network consists of three-node chains. For pairs like A and C in real world networks, one might have as many as five or six intermediate nodes. In a four-channel network like Figure 5 there may be three or four recipient nodes: here goods and cash flow in both directions and some of the intermediate nodes are connected to more than one final node in the set {α, β, γ, and δ}.
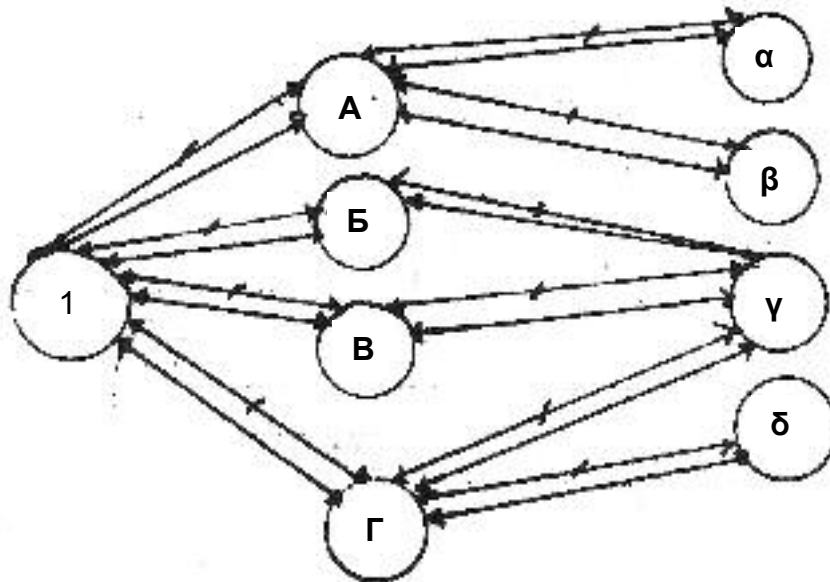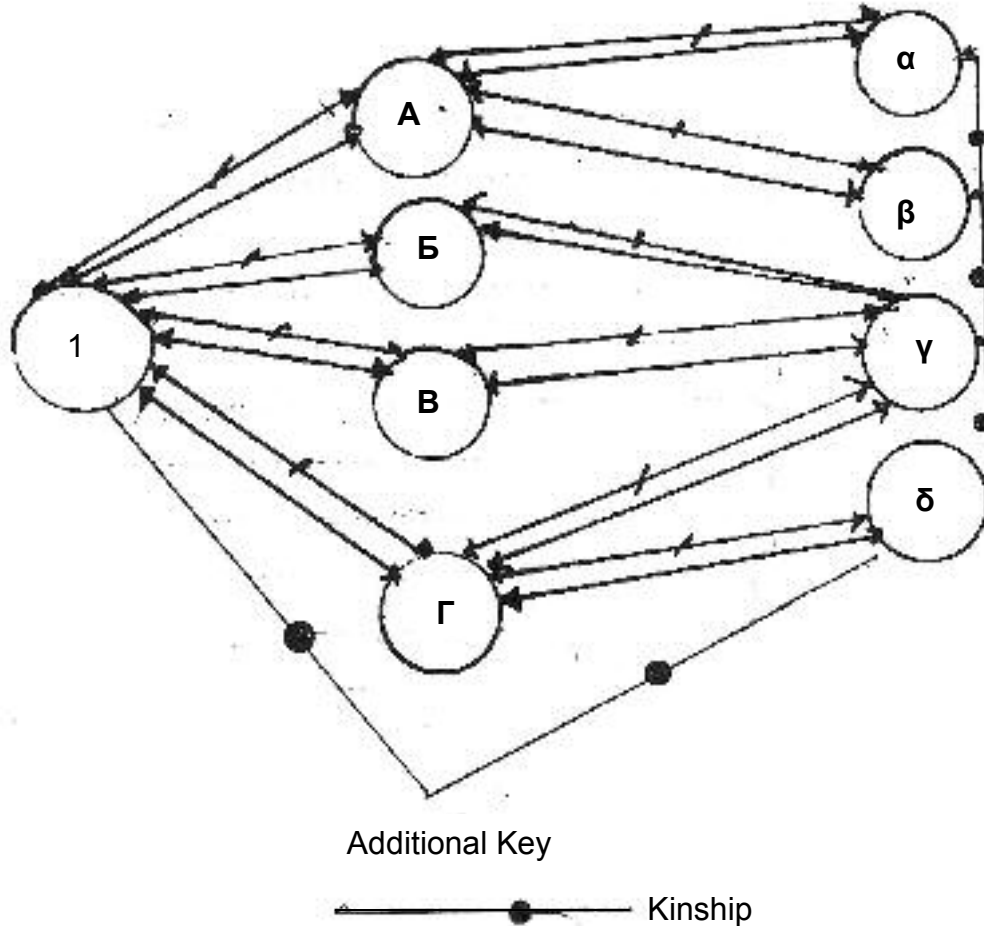
Figure 5: Small Remittance Network

Figure 6 shows the same network with kinship superposed. Here it is clear that nodes А, Б, В, and Г are what are called "factors," they are hired hands who perform functions for a group of kin – connecting α to his or her kin in a distant city or cities.

Figure 6: Small Remittance Network with Kinship Ties Superposed

Additional Key

——————⬤—————— Kinship

Alternative Remittance Networks and Terrorism

In addition to being efficient and inexpensive, as we see in the example provided by Jost and Sindu, transactions in these networks are virtually anonymous. They are legal in the United States unless they involve money laundering or some other illegal function. As in the case of Jost and Sindu's hypothetical cab driver, they can be used without raising anyone's suspicions. It is estimated that tens of millions of these transactions, involving hundreds of millions of dollars, either originate or terminate in the United States each year. Unless they accompany a transfer of goods, they are virtually invisible to the balance of payments calculations. In many cases, merchants do not even record a transaction, but simply change the balance in their records of their accounts with a correspondent. These records and the correspondent's records are then periodically

compared with one another.[9] Thus, seizure of their records will have little evidential value.

In the normal course of events, these transactions accompany other mercantile activity. As a result, virtually anyplace in the United States where special foods, newspapers, or other goods from points of national origin are available, these systems are accessible. They are found among a wide variety of immigrant communities in the US and are integral to them. Migrant workers from these communities, in particular, use them extensively. [10]

One source of funding for terrorist groups (specifically Hamas, Hezbollah, and al Qaida) is a variation on the protection rackets made famous by *la Cosa Nostra* families in New York and Chicago. It is centered in the American Midwest, in cities like Detroit and Toledo. It works by sending a group of three or four, generally either large men in business suits or particularly intense young men, to the store of a particular shopkeeper to excoriate him for failure to support The Cause. It is pointed out that his or her business is dependent on the goodwill of members of that particular ethnic group. They tell him that fifty or a hundred dollars a week will make him look like a good member of the group. Each week, one of the men will come by to collect. The shopkeeper pays for this by running a second register with no tape in it until he reaches his or her quota.[11]

These funds are then remitted to the particular group in mind by merging them with legitimate transactions. The problem is that these transfers are not being used to purchase goods. Therefore, merchants in the US may be drawing extensively on their accounts with their correspondents. This makes it necessary to do an actual physical transfer. In Detroit, there was a currency dealer who bought Canadian dollars from Islamic Detroit merchants, paying a slightly better rate than the bank rate. After he had accumulated about $10,000 Canadian, he would pack it into a briefcase and drive over the Peace Bridge to Windsor, Ontario. He would then sell it to a local merchant at slightly less than the chartered bank rates. This was possible because he would be paid in US dollars accumulated by that merchant in Canada.[12] For a small fee, the currency dealer and merchant would also buy a bank draft in US dollars from a Canadian Chartered Bank. This would then be sent by courier to a correspondent in Dubai who would transmit it wherever the originator wanted it to go. For very large transactions, payments were merged with donations from US-based foundations to various Islamic charities

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[9] Now, with the Internet, this can be done virtually at will. We are told that there seldom are discrepancies.

[10] See Murshid, K. A. S., Kazi Iqbal, Meherun Ahmed Dhaka (2001); Suchada Tantasuroek (1992). This makes them ideally suited to illegal immigrants, of course, because the kind of tracing of official transactions, which might uncover them, is not possible where no record of transactions is kept.

[11] This is a source of vulnerability to terrorist-related networks because, of course, no sales tax is being paid on these transactions (see United States 2001).

[12] Canada keeps careful track of legitimate bank transactions through a branch of Statistics Canada called the Balance of Payments Monitoring Division. This is necessary because 80% of the Canadian economy is involved, directly or indirectly, in foreign trade. The comparable number for the US is 20% and of this, 80% is with Canada. Thus, only 4% of the US economy is involved in foreign trade with countries other than Canada. Thus, it really rankles Canadians when American president after American president refers to Japan as "our largest trading partner." It is strategic, however, that a fair share of transactions with countries other than Canada has to do with purchases of oil.

which, after a small toll, would pass them on to the target group. It is estimated that several million dollars a week was transmitted to terrorist groups by these various means from Detroit and Toledo alone.

The international center for alternative remittance networks today, as Ganguly (2001) observes, is Dubai. There are several reasons for this. First, as an oil-rich emirate it is awash in petrodollars. Since the point of origin or terminus of many of these transactions is the United States and many in Dubai use US dollars as an international reserve currency, large transfers to or from the United States can be made by simply moving money from one side of a ledger to another. Second, Dubai is an absolute free zone with respect to currencies. Arbitrage, we are told, is done in Dubai in more currencies than in Switzerland. Europe, another important point of origin or terminus of these transactions, is now as accessible as the US via the Euro. Third, the flow of oil from Dubai is large enough to cover a "wet" transaction of any size and the returning revenue can be used to conceal large transfers. Finally, there is virtually no bank regulation so if actual, visible transactions have to take place, the banks in Dubai will not cooperate with foreign investigators.

There are indications that four major kinds of remittance networks come together in Dubai: the "Arab Network" whose centers are in Saudi Arabia, Jordan, Syria, Palestine and Lebanon (and once covered Iraq as well); the "Pakistani Network," which is widely dispersed throughout the world including sites in the United States, Britain, and Continental Europe; the "South Asian Network," which includes the Philippines; and the "Lebanese Diaspora Network," which includes Lebanon, the United States, Germany, France, Tunisia, Morocco, Spain, South Africa, Kenya, and Ghana.[13]

Conclusion

We have seen that alternative remittance systems are highly formalized through local contracts, kinship and marriage, friendship, common business arrangements, partnerships, ethnicity and religion. Before the emergence of modern fiduciary institutions, they were the only remittance system. In the West, they were referred to as "merchant banks" because they did banking on commercial credit.[14]

In many parts of the world, these systems are predominant today. They have persisted because they are fast, inexpensive, and reliable. Modern communications have made them faster, less expensive, and more reliable. In particular, the emergence of the Internet has been extremely beneficial to them. They are virtually invisible. In many cases, merchants do not even record a transaction, but simply change the balance on their records.

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[13] There are companies in Dubai which advertise the universality of their remittance services. Consider: "U.A.E. Exchange Center LLC, Head Office, Shaikh Hamdan Street, PO Box 170, Abu Dhabi, UAE. Tel: 6322166, Fax: (971-2) 6211447, 6312030, Telex: 24130, Swift: UAEXAEAA. E-mail: exchange@uaeexchange.com (11 branches at: Abu Dhabi (Shaikh Hamdan Street), Ajman (Humaid Bin Abdul Aziz Street), Al-Ain (Buraimi Road), Bur Dubai (Al Falah Street), Deira Dubai (Naif Road), Fujairah (Sheikh Zayed Street), Karama Dubai (Karama Center), Mussafah (New Mussafah, Abu Dhabi), Ras Al Khaimah (Al Nakheel Area), Sharjah (Al Arouba Street) & Hamriya F/Z (Sharjah)." Note the preponderance of wire and email connections.

[14] Modern merchant banks are quite something else again (see Carosso 1970; Wechsberg, 1966).

These systems are common today among Indians or Parsees, Arabs, Pakistanis, overseas Chinese, and a variety of other groups. In the normal course of events they are an outgrowth of other mercantile activity.

Effective contemporary alternative remittance networks today tend to be institutionalized through one or another form of kinship. They succeed in disguising illegal transactions precisely because the volume of all their transactions is so large. These remittance networks are based on institutionalized trust. This trust will be stronger and more closely institutionally hedged when illegal or questionable transactions are being undertaken.

Invigilating this activity demands a careful winnowing out of node pairs. Those involved in money laundering or remittances to terrorist groups will, per force, have to be extremely tight. This means in most cases, they will be kin. The tightest form of this is intermarriage in the same way that it took place among medieval Jewish merchants. We know of several trade-facilitating marriages like this among Pakistanis and Parsees. They are also very commonly reported amongst Lebanese Muslims and North African Arabs.

In principle, the growing reliance of these systems on the Internet should make them easier to oversee. But, in practice, questionable node pairs will be using exotic personal codes, which will be periodically changed. Whenever one member of these node pairs is identified, all his/her activity should be examined carefully for others in an attempt to reconstruct the network of which they are a part. The structure of these networks should follow extremely orderly principles.

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