

Comments to Jon and Justin 07/10/05

You have both suggested to me that the local importance values should feed into the IRCs. This is mistaken as I will now explain.

The IRCs are defined as follows:

An IRC value is a relevance score for a piece of content respective to a given individual user, and is based purely on the actions of that user. [Note: the "individual" could be a post or a literal individual person, or some combination.]

These IRCs are scores based on the actions of individual users on particular transmails. Obviously we could completely change the nomenclature, but this would require substantive revision and the reinvention of a new term for what are presently called IRCs.

Local importance is defined as follows:

Local importance is a function of the user's own IIC for that sender, together with global and cognate importances for the sender.

To make this a part of IRC would be a total confusion of terms.

Basically, any individual users' actions on a particular piece of transmail have two effects:

- they contribute scores to that user's **INDIVIDUAL RELEVANCE COMPONENTS** (*IRC*s) for that transmail x
- they contribute scores to that user's **INDIVIDUAL IMPORTANCE COMPONENTS** (*IIC*s) for the sender(s) $\{s^x\}$ of that transmail

In the communal sphere:

- The user's *IRC*s then contribute to a **GLOBAL RELEVANCE** score – and are available to contribute to any **COGNATE RELEVANCE** scores for other users.
- The user's *IIC*s then contribute to a **GLOBAL IMPORTANCE** score – and are available to contribute to any **COGNATE IMPORTANCE** for other users.
- **GLOBAL IMPORTANCE** scores for senders are calculated periodically using the *IIC*'s.
- **GLOBAL RELEVANCE** scores for each mail are calculated periodically using the *IRC*s (being revised more frequently in initial stages of a mail).

For each user:

- A **COGNATE GROUP** of n users is identified, whose *IIC*s correlate most closely with that user. As we have noted, this means that it is quite possible for John to be in Joan's cognate group but not *vice versa*. The identification of this n users does not have to change rapidly, and it is done on periodic review, with the identities of the n stored locally for user r .
- A **LOCAL IMPORTANCE** value for each sender with whom a recipient r has interacted is calculated periodically and stored locally to r . This utilises the recipients own *IIC*'s for s , the global importance of s , and a value for cognate importance for s found from the combination of *IIC*s amongst the current n identified as cognate to r .

When a TransMail arrives its mail data may include inputs from a **SET OF SENDERS** $\{s^x\}$ who have forwarded or contributed to the history of that mail. A **COMBINATION IMPORTANCE** for that TransMail x is calculated when it arrives, using the mail data to identify senders $\{s^x\}$ and stored locally to r . If any key senders in $\{s^x\}$ have not previously interacted with this recipient, there will be no stored value for local importance for them. In this case a local importance figure is calculated for that sender when the mail arrives, using just the global and cognate importances because there are, of course, no *IIC*s at that point.

The local importance value is then calculated using:

- IICs
- global importance
- cognate importance

In turn the local relevance value (which is the end product of the whole exercise) uses:

- IRCs (if any)
- Local importance
- global relevance
- cognate relevance

I can only repeat, to make local importance “feed into” or “form part of” the IRCs is a real confusion of terms and concepts. If you add this then the whole document needs rewriting and all the terms revising.

At present the document is clear and consistent in its terminology and how each concept contributes to each other. The issue is, of course, the timing and therefore volume of calculations. Clearly they cannot all be done at run time, so my suggestion was made in the diagram on p.70 which is given overleaf in this present document:

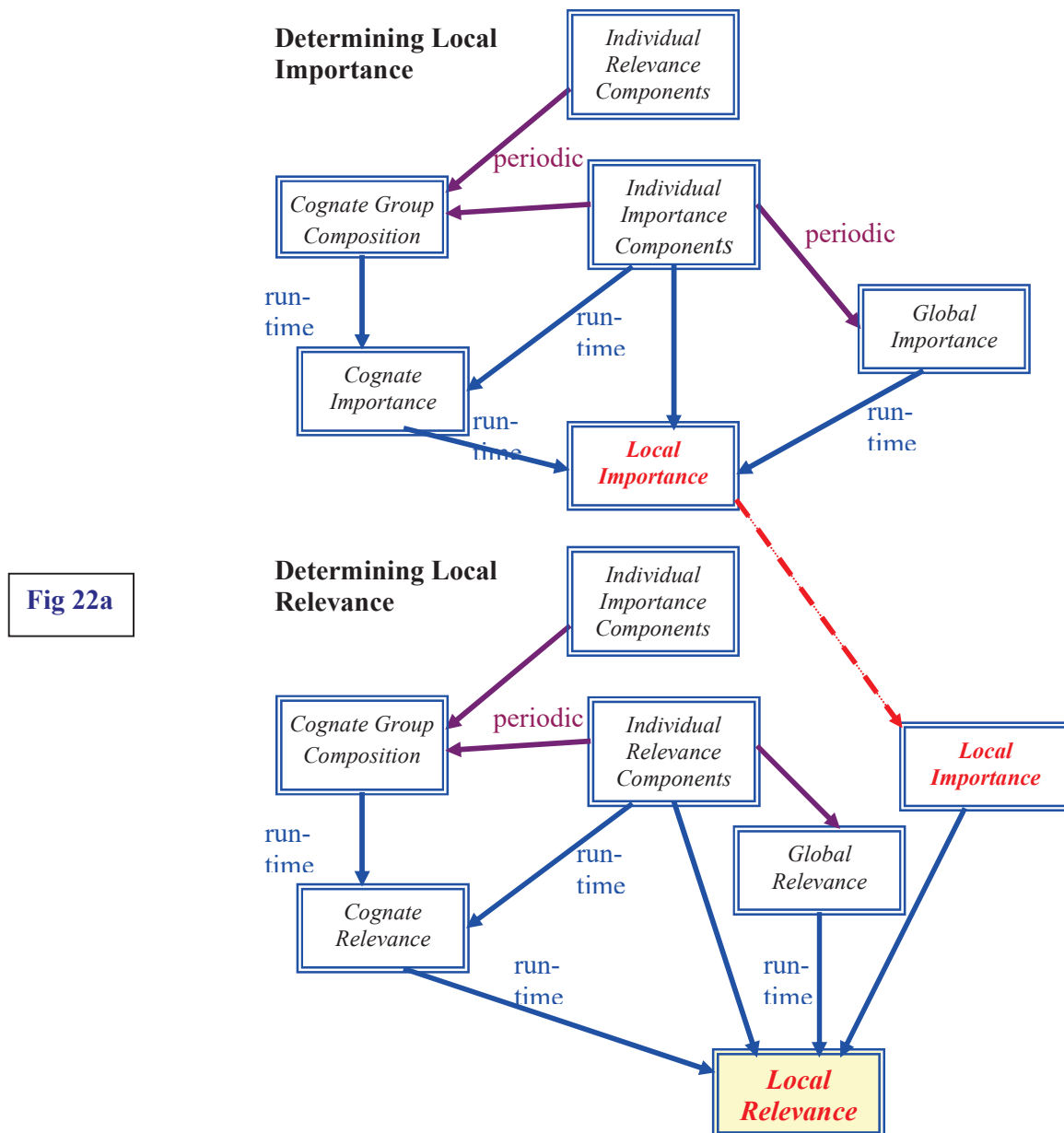


Fig 22a

This diagram implies the following:

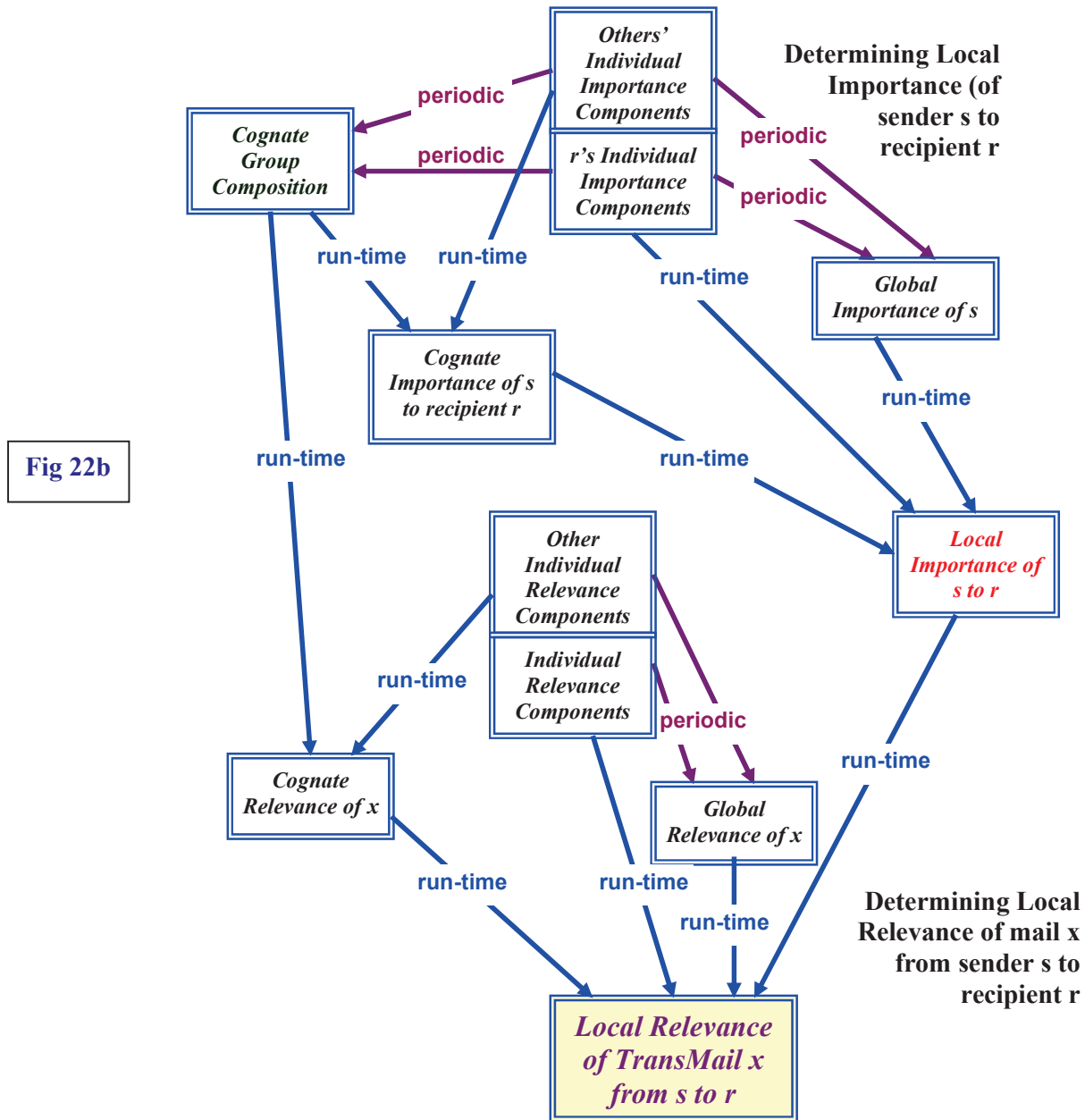
- The IRCs are scores for a TransMail resulting from an individual recipients actions on it
- The IICs are scores for a sender resulting from the accumulation of past and present individual recipient's actions on TransMails from that sender

On a periodic review basis:

- Global importance is calculated from IICs
- Cognate group composition is determined for a given user using IICs and IRCs
- An incoming Transmail triggers calculations run time to find a local importance for the sender to the recipient, and using this and the IRCs a local relevance for the mail

It has now occurred to me that the link between IRCs and cognate group identification could be dropped – we could identify the cognate group by simply correlating the IICs for users (ie your cognate group is the n people with the best correlated IICs to you). This would mean that the

topmost box and arrow in the diagram could be deleted. This would give a diagram which could be as shown below.



Some points to note:

- The recipient r's IRCs consist of actions done by him on this TransMail. His IICs consist both of these and of any past actions done on TransMail from the same sender. These are stored locally to him.
- The cognate group composition is determined by correlating the IICs. The n other users with the most similar IICs to r, will be his cognate group. This is done on periodic review basis, as it does not need to change rapidly.
- The sender s's global importance is found from all the IICs (including that of r) on a periodic review basis. As noted, because importances are used to weight the IICs to determine importances this is circular – but it is solved to a given accuracy on this periodic review basis.
- The Cognate Group has two effects: One is through [Cognate Importance ► Local Importance ► **Local Relevance**] which looks at how the Cognate group in general have rated the sender.

The other effect is through the direct actions of the cognate group on this particular TransMail ie [IRCs of Cognate Group on this Transmail ► Cognate Relevance ► **Local Relevance**].

- (e) **As it stands** the cognate importance of s to r is calculated only when needed, ie if r receives some mail from s.
- (f) **As it stands** there will be a local importance of s to r only if r has received some mail from (or perhaps sent some to) s. This will be calculated at the time of arrival of mail, using any IICs together with global and cognate importance.

The process as it stands when a mail arrives is as follows:

1. The cognate importance and relevance are calculated
2. Local importance is calculated using cognate and global importances together with the individuals IICs
3. Local relevance is calculated using cognate relevance, local importance, cognate importance and any IRCs (though there will not be any of the latter when the mail first arrives).

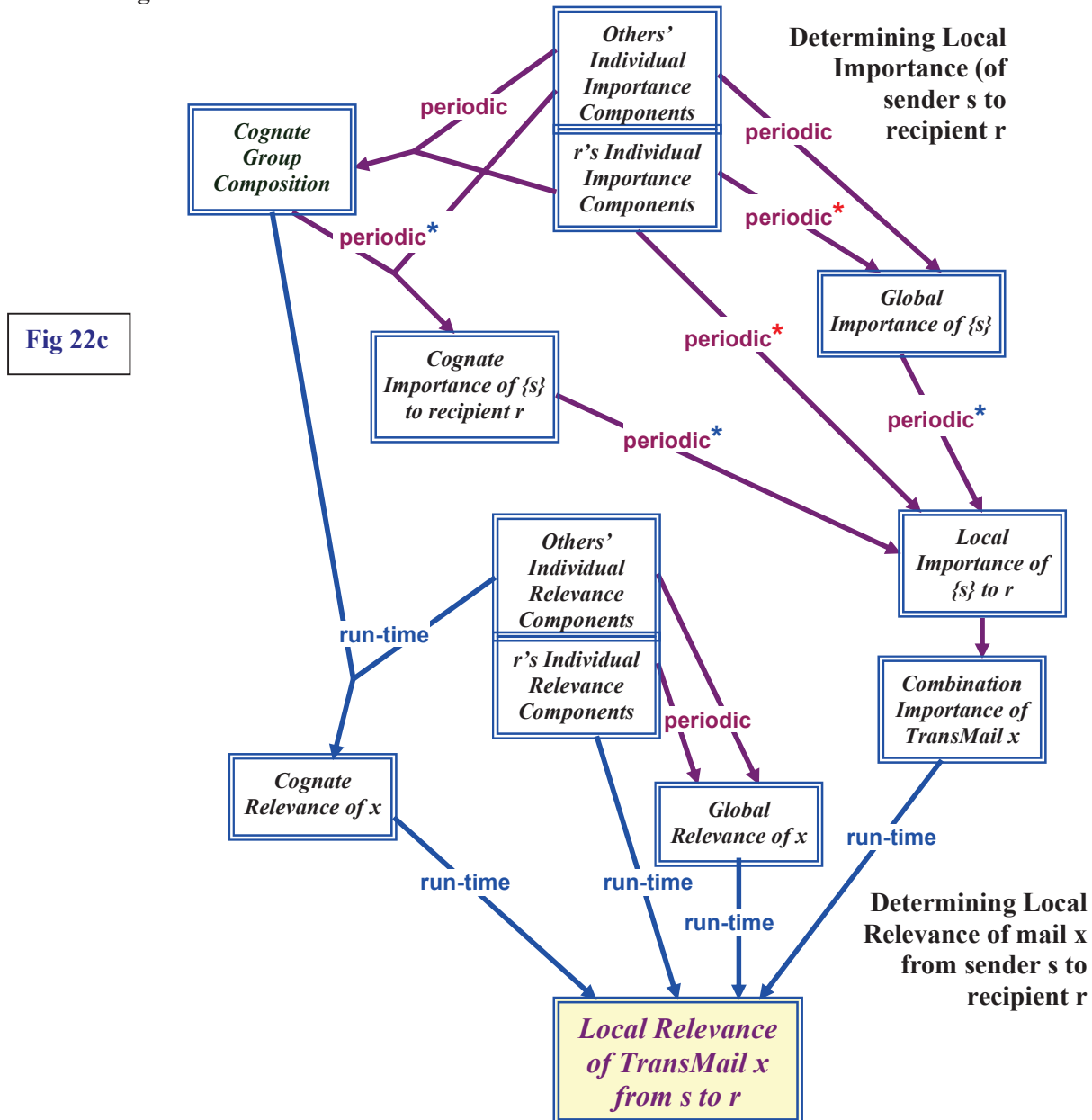
Perhaps a problem with this is that if one of the cognate group does an action on the mail then this would require recalculation of cognate relevance, cognate importance, etc. Perhaps this is what concerns you.

If this is, however, processing overload, it does not make sense to try to confuse local importance and IRCs (which are rather like the one about the difference between an elephant and a pillar box). What can be done is to change some of the processes to periodic review. This is explored on the next sheet.

Some Possible Variations

- (i) **It would be possible** to store a cognate importance figure (periodically reviewed) locally to each recipient, ie for any sender s with whom r had previous contact there would be stored locally to r a cognate importance value periodically reviewed. In this instance it would still be necessary to calculate such a value if this was the first contact between s and r – otherwise you would have a huge matrix mostly containing null entries because most users will never contact each other.
- (ii) **It would also be possible** to store local importance values for s to r , again periodically reviewed. Again, it would still be necessary to calculate in run time if s and r had no previous contact.

The diagram will now look like this:



Note: If this is the first contact between s and r then the arrows marked * will be absent and the arrival of mail will trigger the calculations of arrows marked * (which are usually done only on periodic review) because no local importance figure will previously exist.

The Process is now as follows:

Let us remember that the end aim is to produce a “good” figure for local relevance, which is the browse relevance seen by the recipient. If the system is to be any use, then we want to have a rapid effect of actions on the mail or (in decreasing order of importance)

- *the actions of user r himself on TransMail x*
- *the actions on the TransMail x of the cognate group to r*
- *the actions of all the other recipients on TransMail x*

The system implies:

- (1) Global importances are periodically reviewed. The composition of the cognate group based on correlation of IICs is periodically reviewed, as is cognate importance for any sender with previous contact with r – which is stored locally to r
- (2) The local importance of s to r is a function of IICs, global and cognate importances. A figure for it is periodically reviewed and store locally to r. If this is the first contact between s and r then the arrival of the mail triggers a calculation of an initial local importance based purely on the global importance of s and the IICs of the cognate group.
- (3) Obviously one would want the effects of r’s actions on the mail) or any other mail from the same sender) to have a run-time effect on the local importance of that sender to him.
- (4) The issue then concerns which particular actions will have run-time effects.

As it stands:

- **The user r’s actions act as IICs and immediately affect the local importance of s to r which in turn affects the local relevance of mail x** [If a user thinks little of a sender then this needs to be reflected rapidly – and in any event requires only local calculations.]
- **The user r’s actions act as IRCs and immediately also affect the local relevance of mail x directly.** [If a user thinks little of a sender then this needs to be reflected rapidly – and in any event requires only local calculations.]
- **The actions of any of r’s cognate group on mail x will act as IICs on the importance of s, but this will not immediately affect the cognate importance of s to r, because this is done under periodic review.** [It would be nice for this to happen more rapidly, but this is probably impracticable.]
- **The actions of any of r’s cognate group on mail x will also act as IRCs and in this guise will immediately affect the cognate relevance of mail x, and through this the local relevance of x to recipient r.** [If this is *not* effective in run-time or at least very rapidly then there is almost no point in having the system. The point is, however, that the numbers in the cognate group are not large. Hopefully, the calculations are therefore realistic. If it is not practical to update the cognate relevance real time, it could alternatively be triggered by a “refresh” instruction from the user at the point where he actually wants to browse his mail. This latter would be just as satisfactory, and would require less updating. This could be indicated by a different coloured arrow signifying a triggered process if you wished.]
- **The global relevance changes less rapidly – although it is an input to local relevance in run-time, the figure itself does not change in run time.** [Either the global relevance will be done in run-time or in periodic review – there is no possibility of any user triggering a recalculation because the figure is global. It would be nice for it to change rapidly, but the rapidity may depend on traffic and capability.]

I have changed 22c to reflect the joint inputs with arrows which merge – cognate relevance eg is found by using the composition of the cognate group to weight their individual IRCs.

If you are happy with this, then I can incorporate it into the document – replacing the existing diagram and adding the text.

EXHIBIT 2063

metadata slip sheet

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LastModifiedDate	10/8/2005 4:49 AM
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Author	Marston
SortDate	10/8/2005 4:49 AM
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Exhibit No	