Personal Multithreading: Account Snippet Proposals and Missing Account Indications

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Abstract

A modular way of making progress concerning personal multithreading is suggested: collecting account snippet proposals and missing account indications without an immediate need for integration into a coherent account. Six account snippets for personal multithreading are proposed and and four options for further contributions, that is missing account indications, on personal multi-threading are listed.

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1 Introduction

In [2] I have proposed an account (story) of personal multithreading. Hereafter I will abbreviate personal multithreading as PMTh where the postfixing "h" has been added to allow a distinction from the abbreviation PMTa for personal multitasking. The account is based on a mathematical view of multi-threading named thread algebra that transpires from the work in [4, 6, 7]. The account of PMTh from [2] is far from complete and completing it is at this stage not a feasible objective. Instead the question how to proceed from [2] is better raised as a methodological issue.

That methodological question, however, has no simple answer and it seems to create too many ramifications too deal with. So I can't do much more than to put forward my own strategy of going ahead with PMTh without comparing that strategy with alternative options for making progress within this theme. My plan is based on the following assumptions and observations.

1. PMTh strikes me as a compelling concept even if my own attempts to work out its details into an illuminating and useful theory don't succeed. That is to say, I feel no need to prove, demonstrate, illustrate, or motivate, the viewpoint that multithreading provides a meaningful intuition when contemplating an agent's behaviour. And this includes the case of human agents. The challenge that I see is to advance beyond expressing that intuition. At the same time I expect that if obtaining such progress proves unachievable for myself, said intuition will remain in place, and the expectation that a practically useful account of PMTh will eventually be found by someone else will be strengthened.

2. Because (in my view) all human agents deal with multithreading there is little point in claiming priority for making any observation about it. Perhaps on the long run priority may be claimed for the design of a comprehensive theory about PMTh but the path towards that theory is long and risky and for that reason an open and transparent attitude towards the way of going ahead and finding that path seems to be optimal. In other words the compliance with standard methods of claiming intellectual ownership would constitute in this phase for me an additional burden that I cannot justify. It might even introduce an additional risk of failure instead of an additional probability of success.

3. The main empirical test that I use for a feedback loop controlling the development of an account on PMTh is the extent to which I can apply the story on PMTh to the planning of my own activities. On the long run that is insufficient as a method of validation but for the time being it provides remarkably much inspiration. I have determined a HMTA[1] for myself to which I am adhering rather strictly and when problems with its effectuation arise I try to find out if the theory (that is my current account on personal multithreading) needs adaptation, or if merely the way in which it is applied needs to be changed and improved. The precise form of my own HMTA I consider to be private information which should not be reproduced in a paper about PMTh. However, below in Paragraph 2.2.3 I will provide an approximation of my HMTA which contains publicly available information only. That view may be referred to as a public HMTA, which is an approximmation (subset) of a private HMTA.

4. I will view an account on PMTh as a collection of elements which may be applicable in certain circumstances to different degrees. As the account

[1] HTVA stands for hierarchical multithread architecture; this notion was introduced under the name HTVA (hierarchical thread vector architecture) in [2]. I have changed the name from HMTA to HTVA in order to simplify the terminology.

moves through different stages this collection is dynamically updated. In the worst case none of the elements of an account of PMTh are of any use to a given human agent contemplating its application. I will not try to predict, let alone prescribe, in what cases a human agent may find the various elements from an account on PMTh useful. Finding that out is left entirely to the responsibility of a human agent (reader) who must first agree to consciously engage in becoming familiar with the account at large.[2]

5. PMTh is formulated at the level of arbitrary agents rather than human persons, in the following sense: suggestions and policies are conceivably useful for an arbitrary agent and therefore just as well for a human agent. No implication is intended, however, that there is empirical evidence of the effectiveness of the elements of an account on PMTh for human agents. Empirical research may validate or invalidate such elements relative to classes of agents, in particular relative to human agents operating under specific conditions. My idea is that human agents upon reading an account of PMTh (or attending presentations about it) may use the information sort insights thus obtained primarily as a conceptual scheme from which to assess the relevance that specific elements may have in their own situation. And of course, being quite critical about the account and overcoming one's doubts about it, must precede any form of adoption.

6. Observations, new ideas, and modifications of existing thoughts on PMTh are formulated concisely in so-called account snippet proposals. This will allow a modular approach to the design of accounts of PMTh. More specifically account snippet proposals are introduced in order to allow a modular construction of an account from elements each of which have some probability of being rejected in a later stage in view of defective validity or lacking relevance.

7. The main difference between this modular design process and logical or mathematical theory development lies in the necessity to deal with extensive delays in detecting that a building block (account snippet proposal) is incoherent, implausible, or otherwise defective with the implication that it is best not incorporated in more extensive accounts. Viewing account snippets as working hypotheses suggest a validation mechanism which is unavailable. Acceptance is merely continued non-rejection, and rejection may be temporary only.

8. Account snippets constitute potential portions of actual, past, hypothetical, or conceivable, accounts of PMTh. In various phases the existing account snippet proposals are evaluated concerning relevance and validity and a version of an (integrated) account (on PMTh) is produced.

[2]This viewpoint implies that for instance consulting an individual P based on my account of PMTh (in the current or future versions) must not take the form of suggesting P to adopt some of the elements of the account without making sure that P agrees with the account at large as a basis of reflection about issues of planning and defining objectives and goals.

9. The account of PMTh in [2] may be understood as providing a first version of an integrated account from a collection of account snippet proposals that is implicit in the paper only. Its systematic abbreviated description (not mentioned in [2]) is: PMTh A-v1.0.

10. Decomposing PMTh A-v1.0 into a flat collection of elements which subsequently are imported as account snippet proposals in a new design phase will be needed at some stage.

11. Account snippet proposals which are rejected at some stage need to be be filed and preserved for later retrieval in order to avoid the risk of circular development of accounts. The current stock of rejected account snippet proposals is empty.

12. Account snippet proposals can be put forward by anyone, and when an account snippet proposal is emailed (by a non-anonymous human agent) to MRbv I will make a limited effort to either incorporate the proposal in the collection of such proposals or I will add the proposal to the collection of rejected account snippets. In both cases the name of the originator of the snippet shall be clearly mentioned when the snippet is made further use of.

13. Conflicting account snippets may be included in the same version of an account of PMTh. If that happens, the need for resolution of the occurring conflict in a later stage must be made explicit.

14. Complementary to account snippets which may be viewed as candidate answers to questions are so-called missing account indications. I prefer not to speak of open problems because that suggests that a useful additional account can be found. Rather the mere indication that a hole in the current account of PMTh represents an opportunity to formulate another account snippet is meant.

In this paper I will merely formulate some account snippet proposals and some missing account indications, leaving the task to determine PMTh A-v2.0, or one ore more preliminary versions PMTh A-v1.i of it, to a later stage.

Below I will use HMTA for hierarchical multithread architecture, which refers to the same idea/notion as the HTVA (hierarchical thread vector architecture of [2]. I now prefer to use multithread instead of a thread vector.

2 Six account snippet proposals

In the following Paragraphs six different issues are addressed each giving rise to a proposed view that may be incorporated in a following version of an account on PMTh. The six views are presented as account snippet proposals for PMTh. At the time of writing I claim originality for these snippets because I am not aware of the existence of text fragments embodying similar ideas in each case. That

judgement may change in due time, once I become more familiar with accounts of (social) psychology and management science in which multithreading plays a role.

2.1 Stability of the hierarchical multithread architecture

I will now consider an agent A who has settled for a HMTA named α. Although it is assumed that A regularly updates α the question arises to what extent A needs α to be stable. Here stability means two things: (i) that α changes in time only slowly by making well-considered transitions to a successor HMTA, and (ii) that in each of its phases the HMTA has a built in tendency to return to its original state if it happens to have been moved out of its shape.

Introducing a workable concept of stability for a HMTA is not so easy. But if A's HMTA fluctuates drastically to the extent that each thread switch is done in a different setting the value of a HMTA becomes vacuous. Changes in the HMTA, say deletion of threads or subthreads and introduction of threads or subthreads, as well as modifications of individual thread specifications, should occur with a lower frequency than thread switches. Relative to such HMTA modifications threads switches must be frequent so that some judgement of fairness in terms of which threads are chosen for switching into can be made at all times. I guess that at most a single HMTV modification per five thread switches may be a reasonable maximum to the proportion of modifications and switches.

2.1.1 Two stabilizing mechanisms

I will assume that A's HMTA prescribes fractions of time and energy (in total referred to as attention) which A spends on separate threads. Most likely, the distribution of attention which A actually achieves will fluctuate around this prescription with some upside and downside variations. Now stability, if it emerges, may have two different causes: (i) either by means of active control: A makes sure that when switching to another thread the step is taken in such a manner as to shorten the gap between the observed (in the practice of A's past behaviour) distribution and the intended (in HMTA) distribution, or (ii) by means of passive control: A is sensitive for some intrinsic qualities of the various threads in such a way that a (seemingly) spontaneous manner of thread switching (by magic) ensures that on average A performs thread switches in such a way that the intended distribution results.

Remarkably if (ii) applies the descriptive quality of A's HMTA is maximal, and at the same time its pragmatic value has become very low. If both mechanisms are mixed in such a way that only a minority of thread switches requires active control, the HMTA turns out to have a prescriptive functionality which may justify the cost of its design and maintenance and of realising operational compliance.

2.1.2 HMTA stability as a precondition for self-confidence

There is another side to the relevance of HMTA stability for A which is more intrinsic to the idea of PMTh, and that is the fact that all of A's concerns and activities are supposed to be covered by α, ranging from all professional involvements (if any) to all spheres of A's private life (if any). It is plausible that A's self-confidence is linked to its sense of identity as embodied in some of the threads and subthreads of α. Then only by managing α in a stable and systematic manner A can expect to have a stable and reliable approach to maintaining adequate self-confidence.

2.2 Threads and roles

It is plausible to package roles fulfilled by an agent A in subthreads of appropriate threads of its HMTA. Roles may have different qualities such as:

- hard to acquire/easy to obtain,
- hard to fulfil/easy to perform,
- highly visible/moderately visible/poorly visible/invisible,
- status defining/status enhancing/not linked to status/status degrading,
- satisfycing/unsatisfactory,
- necessary/important/relevant/hardly relevant/irrelevant,
- constituting an outlet for A's ambitions/for A's amusement/ or for A's wish to provide a community service,
- appealing to A's specific competences and abilities/not demanding specific abilities of A.

It is useful if A includes an assessment of each of its roles according to these criteria in the description of α. This will be helpful for A when dealing with an overflow of demands for its attention. There is no immediate translation from such an assessment to the setting of priorities that governs thread switching.

2.2.1 Threads as sites of self-confidence and pride

If a thread t has been spotted as a locus of identity and pride for an agent, or as a direction in which future success and identity may be found, the temptation to spend more time and energy to thread t may become so strong that other threads are eventually neglected. This tendency may not be advantageous for A.

If A thinks in terms of self-confidence, satisfaction, and pride, then a practical rule of thumb may come from the insight that the real test on the capacity of a thread for hosting its agent's self confidence is that the hosting capacity for a self-image of a specific thread remains unchanged if A switches to other

threads for a limited period. Here lies a key (intended) virtue of PMTh in that it supports A in avoiding to spend too much time on its most cherished threads, while featuring a postponement syndrome (also called procrastination) with respect to less cherished threads, and to to remain fully aware of the importance of seemingly less important threads because of their functionality in terms of A's long term survival and sanity.

2.2.2 Flatness of HMTA

A must see to it that none of its threads becomes completely dominant. That dominance would run counter to the idea of a HMTA covering all of A's concerns. Unavoidably avoiding life-threatening conditions may become dominant at some stage. I guess that it is plausible that in extreme circumstances any HMTA α will become temporarily meaningless and no degree of prior preparation sedimented in α may be allowed to have too much influence on A's way of choosing its course of action.

Leaving extreme conditions aside, balancing private and professional life may constitute a major concern when designing and maintaining α. The same holds for different aspects of A's private life. This need for balance calls for a relatively flat top-level structure where each thread is of more or less equal importance.

2.2.3 How this works out for myself

When applying these considerations to myself I arrived at a very generic (and flat) multithread, that serves as an approximation from which a HMTA can be obtained by means of successive refinement. I will refer to this structure as an architectural template for a HMTA.[3]

There are precisely 6 threads, $T_1, ..., T_6$, each of which have a variable number of subthreads.

T_1= research A: conventional research, aiming at scholarly publication in reputable outlets. (three subthreads, $T_{1,a}$: meadows and arithmetical datatypes, $T_{1,b}$: instruction sequence theory, and $T_{1,c}$ proposition algebra and short circuit logics).

T_2= research B: unconventional research, (for instance aiming at writing and publishing nopreprints, see the Appendix for that notion), in particular

[3]This template may be usable for all persons with academic roles or ambitions. It may be somewhat specific for my now situation in that my non-research work consists of management and administration only. I imagine that persons involved in teaching as a part of their job would include teaching in subthread T_3.

Publishing one's HMTA is probably not generally advisable. The description below is a public part of my personal current HMTA, all information from which it has been made up is publicly available already. This thread, however, has a private refinement: two subthreads have not been shown, no information concerning relative priorities and relative or absolute degrees of attention is provided, the description of T_6 is generic (abstracting from the concrete individuals featuring in the version of T_6 in my private HMTA) and might be included in precisely this manner for every other person as well, no decomposition in sub treads of T_3 is provided. The refined version is what I need when making practical use of the HMTA.

consisting of the following four subthreads, $T_{2,a}$: informational money, Bitcoin, Islamic finance, $T_{2,b}$ personal multithreading, decision taking, promise issuing, and sourcing, $T_{2,c}$: educational application of meadows and arithmetical datatypes and of paraconsistent reasoning, and $T_{2,d}$: instruction sequencing methodology and inseqware engineering).

T_3= organisational/professional A: primary tasks of management and administration and specialised work, (including mainly my work at the University of Amsterdam).

T_4= organisational/professional B: secondary tasks of management, administration and specialised work, (currently containing 8 threads respectively devoted to: i) involvement with Minstroom Research BV, ii) my current role as a chair of the Informatics Section of Academia Europaea, iii) my current role as a chair of the board of PRAGO, iv) my current role as a chairman of PATO, v) my current role as the secretary of the Mathematics Section of KNAW, vi) my current role as an editor-in-chief of Science of Computer Programming, vii) three other editorships, viii) my role with Emma At Work which is yet to take shape).

T_5= private life A: primary priorities and concerns, (partner, housekeeping activities, children, grandchild, home, old friends and relations, extended family, financial matters, sailing with our "Valk" (an 18 ft open boat with two sails of in total 16 m2), watching TV, reading newspapers, participating in the "buurtgroep").

T_6= private life B: interaction with some friends that don't usually mix with the key agents in private life A.

Looking at this listing it may come as no surprise to a reader that T_4 creates a systematic sense of lack of time for me. Performance problems in that thread and in particular in some of its subthreads constitute the primary incentive to think of myself as a putting into effect a multithread which itself is in need of both design and analysis, and for which achieving stability cannot be taken for granted. Awareness and maintenance of this HMTA is proving helpful for me to deal with the occasional occurrence of an acute sense of overloading but it is not by itself a sufficiently powerful tool for choosing which subthreads to discontinue.[4]

2.3 External memory used for maintaining a human agent's HMTA

Suppose that a plan to achieve a certain goal requires 10.000 steps. All steps are supposed to be of a similar kind though with different parameter settings,

[4]Perhaps this constitutes a missing account indication: a mechanism may be needed that creates a crisis every now and then which enforces the simplification of a slowly but steadily growing HMTA by way of the deletion of subthreads. But well-organised agents don't need that, or do they?

and for that reason amenable to being encoded in numbers from say 1 up to 1.000, the agent being able to perform a step when given its encoding. Assume that the (or a) required (satisfactory) sequence of codes for these steps can be computed and listed, though at a significant computing cost and involving a computational effort which is well beyond the capabilities of any human agent.

Now it is implausible that a human agent uses a computer to create that plan, then creates a thread containing that plan, and memorizes all of it and subsequently puts the plan into effect. A computer could do that, but for a human agent it is unreasonable to expect that it possesses such an (irrelevant) ability.

Although this example is admittedly somewhat farfetched I suggest that for a human agent it will be practical to have an external storage medium for his/her HMTA. Even long term high level priorities run the risk of being forgotten if lower but short term priorities temporarily require full attention. The HMTA must contain a complete listing of threads and subthreads represented in terms of objectives and actions, and in addition to that must also provide strategic information on how and why priorities are set, on how to interrupt the effectuation of a thread when preparing a switch to another thread and so on.

Especially for persons who may have difficulties to memorize the HMTA which they have designed for themselves a persistent representation in external memory that allows fast access and easy updating is important, and precisely for such individuals an awareness of a convincing account of personal multithreading may be helpful.

2.4 Identification of bottlenecks

It is essential that an agent closely monitors its progress on the threads and subthreads of its HMTA. Enduring delay of making progress in one of these threads is an indication that an action or a group of actions that occurs in the plan for the thread has developed into forming a bottleneck.[5] It is a sign of adequate design of an agent's HMTA that bottlenecks are localised entirely within specific threads.

If bottlenecks can't be resolved that will mark the end of the utility of an HMTA. The simplest solution when a bottleneck has been observed in a thread, say thread t, is to drop that thread from the HMTA so that the bottleneck stops being a problem. If dropping a thread solves an issue, however, that

[5] There is a somehow unresolvable ambiguity between an action viewed as an element of a plan (future action), and an action viewed as an element of an observed behavior (current or past action). Which of the two is meant needs to be read from the context of use of the term action.

This ambiguity is so omnipresent that a treatment of it in terms of paraconsistent reasoning by means of the chunk and permeate reasoning strategy of [9] seems to be reasonable. After co-authoring [3] which demonstrates the need of paraconsistent reasoning when dealing with fractions in the context of the common meadows of [8] (see also `https://zenodo.org/record/15481#`, an entry created automatically upon refusal, without further explanation, of the same text as a contribution to the Journal of Brief Ideas), I am convinced that paraconsistency plays a role in many seemingly innocent settings featuring some form of ambiguity, including the ambiguity between both interpretations of action just mentioned.

fact by itself is a bad sign for the design quality of the HMTA in which it occurs. Preferably redundant tasks and threads have been pruned away already in order not to deflect time and energy from more important threads. Bottleneck detection and subsequent bottleneck resolution appears to be a crucial feature of multithread effectuation. This implies that each thread maintains a control state which provides information on progress and on judgements about parts of a thread that constitute a potential bottleneck or an existing bottleneck.

2.5 Fragmentation of blocking actions

A major problem for an agent who conceives of itself as effectuating a hierarchical multithread arises if an important thread gets stuck because a vital action proves difficult and does not get completed, or if some external mechanism or state of affairs prevents that bottleneck action from being performed. In that situation, unless the action is made somehow redundant by thread reorganisation, or if the threads to which it belongs can be easily dropped, the multithread architecture runs the risk of simply forgetting the problematic thread in spite of the fact that progress needs to be made. Thus, it is important that a potentially blocking activity is dealt with effectively. Now if the thread can't be redesigned as to make the action redundant, and if dropping the blocked thread is considered problematic the agent enters a phase where in order to make progress with that specific thread a complete focus must be directed to resolving the blockade of that problematic action and perhaps even the context of the multithread must be forgotten. This focus at the cost of overall awareness runs counter to the idea of PMTh.

A possible way to overcome this problem if it occurs, and if its occurrence is diagnosed in a phase of bottleneck identification, is to decompose or fragment the problematic action into a collection (process) of smaller actions that together produce the required effect. In this way the local level of granularity is adapted so that the probability of any of the new actions constituting a bottleneck is lowered. Importantly, the agent (say P) may use fragments that it might not contemplate as options if there were only a single thread and the blocking a action had to be overcome at all cost (or a problematic price had to be paid). The argument that I see for P's increased tolerance for considering bits and pieces of the action (say a which has been diagnosed as a bottleneck) as novel actions worth of being incorporated in its HMTA (in spite of the possibility that blocking will occur at a lower level thus rendering some of the new actions futile) is that in the context of a complex HMTA, P's sense of identity is less coupled with the critical action (that is with a) and it becomes simpler for P to apply methods which it might consider unacceptable (because slow and not necessarily successful in that resulting state is as if a were performed) if successfully effectuating action a were the only reasonable option to it.

Such methods may include: sending a message to relevant agents that they should expect a delay because P finds it difficult to put the action into effect, asking another agents how they would proceed with effectuating a if that were their problem, asking other agents for support in performing a, asking another

agent to determine a fragmentation of a which renders it doable for A, attempting to perform a in a simulation/test environment so that failures are not yet problematic, or setting up a simulation environment for that same purpose. If by not having an overal HMTA in mind A's only conception of a next action is to effectuate a then slowly embarking on the effectuation of the steps resulting from the fragmentation of a may seem to much of a detour for A. If, however, A has a sizeable multithread with many threads and subthreads from which to choose actions for greedy effectuation (see below) then A may not be worried with a couple of seemingly trivial actions sprouting from a. Indeed it may already be useful for A to get a number of the fragments of a performed without A getting worried about the delay in completing a. The very fact that the multithread is kept in shape is valuable for A and compensates for the additional delay in performing a that is caused by its fragmentation.

2.6 Greedy effectuation of random actions

A hierarchical multithread may involve tens or even hundreds of threads and subthreads each of which may at some stage provide a significant set of tasks to be done. It is unfeasible to have a priority ranking mechanism in place which as soon as spare working capacity is available allows an agent to determine the action which is next to be done with highest priority.

An agent should better allow part of its processing time to be allocated to randomly perform actions from a menu of easily doable actions from all threads and subthreads together. It is a feature of each thread that it allows subsequent excursions to all other threads for effectuating minor tasks retiring subsequently to the original thread. In this way no thread switch is made and the agent's priorities are unaffected while at the same time significant progress can be made. Easy tasks should not become a problem by having been unduly delayed. Allowing time for random effectuation of easy (and thus minor) tasks from other threads is an effective strategy for avoiding that a large volume of postponed tasks stands in the way of progress and agility.

An agent's conception of thread switching should leave room for this form of simulated thread switching. Obviously this will not work if an agent tries to perform tasks which are so difficult and perhaps risky that the full weight of setting priorities that comes into play when switching threads must be brought into play in order to make anything happen in connection with the difficult task.

A policy of handling many easy jobs first is practical even if at the same time a limited set of "difficult" tasks seem to block progress. The advantage of getting many small tasks out of the way lies in that it may increase an agents confidence in the feasibility of keeping all threads sufficiently active.

3 Missing account indications

The missing account indications provide options for further development of an account of PMTh. Alternatively these may be considered indications of weak-

nesses of the current account of PMTh. None of these missing account indications is solved by any of the account snipped proposals mentioned above.

3.1 Integrating short-lived activity threads

The assumption that the current HMTA of agent A covers all of its concerns is quite extreme. Where for instance will A perform reading incoming email and other network based information? And even such similar actions as drinking coffee at home before leaving for work in the morning and drinking coffee at work during the day might be allocated to different threads.

Are these in fact futile questions that come about because the model is too simple, is a housekeeping thread needed with the flexibility to accommodate such activities, or should each thread have the flexibility to incorporate short-lived subthreads for a range of housekeeping activities. Or will each thread come with its own specific menu of housekeeping options. At present I have no solution for this issue but there is an opportunity for a better understanding of this topic.

In my own way of practicing the use of a HMTA it seems that I work as follows: (i) to incorporate a significant range of activities in a housekeeping subthread of my private life A thread (subthread $T_{5,a}$ not mentioned explicitly in Paragraph 2.2.3 above), (ii) from there to create new subthreads for relevant other threads if new tasks arise, for instance if emails concerning another thread or subthread must be answered that impacts on the agenda of the other thread, (iii) to allow short-lived miniswitches to other threads from the housekeeping subthread $T_{5,a}$, (iv) being aware that having a dedicated mailbox for each thread might be useful because it produces a lower burden for T_5 (but refraining from splitting incoming mail over multiple mailboxes in view of the risk that some mail be be lost or will be answered to slowly).

3.2 Integrating decision making threads and decision taking threads

All participation of agent A in decision making and decision taking must be incorporated in its HMTA framework. As detailed in [1] decision making and decision taking (by A), once instantiated to specify types of decisions, induce the generation of dedicated threads for A. This constraint raises the question if typing of threads is needed so that prepared protocols (meta-threads) can be used as templates when creating instances of those new thread types.

3.3 Is there an executive thread?

Related to the issue about the role of a housekeeping thread able to host a variety of reoccurring tasks of short duration is the issue whether or not an executive thread must be distinguished. My current view is that having a dedicated thread for executive activities (multithread management) is to be avoided

because it would go against the flatness that was claimed essential for personal multithreading in Paragraph 2.2.2.

What speaks against this design choice for an account of personal multithreading is the seeming necessity for ar agent to consider itself from an external point of view. Having a dedicated executive thread allows to view the design of the remaining HMTA as the solution of an optimisation problem. That view becomes harder if several threads need to cooperate in a distributed optimisation mechanism. But the latter is the preferable view when flatness is an essential demand on the HMTA.

It may be the case that assigning the role of an executive thread to one of the threads of a HMTA introduces feature interaction (see e.g. [10] for that concept), between different notions of thread.

3.4 How about promise issuing?

Issuing a promise requires a sequence of steps which is plausibly organised as a thread. If one knows how to incorporate short-lived activity threads, the incorporation of a promise issuing thread is unproblematic. The difficulty arises with promises at large. A manifest difficulty arises if an agent promises more than it can deliver. There is an account missing on promise issuing for PMTh. This fact constitutes an opportunity for filling a hole in the current account of PMTh.

Now filling this hole can be done in several ways which depend on one's view of what a promise is. I will distinguish two views on promises. These views are mutually incompatible and may even be understood as different theories about promises: obligational promise theory and expectational promise theory. Obligational promise theory is based on the classical view that a promise creates an obligation for the promiser. Expectational promise theory, which was originally formulated and promoted by Mark Burgess in the form of his promise theory (see [5] for a recent account), views a promise as an action that induces an expectation in the members of its audience (referred to as scope) among which in particular the so-called promisee of the promise.

The origin of expectational promise theory lies in the design of distributed systems design where such ethical questions don't enter the scene. I think that Mark Burgess has conclusively argued that (i) the use of promises has much to gain and little to loose from the adoption of an expectational view, and (ii) for the use of promises in computing an expectational view about promising is the better way of going ahead.

3.4.1 Implications of subscribing to expectational promise theory

By having co-authored and published [5], I have made public that I (promise to) favor expectational promise theory over obligational promise theory (which in fact I do). Is it acceptable if I assume that other agents view my promises in the light of an expectational promise theory only?

This has major implications because issuing a promise to a promisee then creates a state from which the premieres can exit appropriately by doing nothing about the body of the promise (see [5] for the structure of promises) and accepting a that the promisee (and perhaps other members of the scope of the promise) will on future occasions generate lower expectations from a promise issued by the same promiser.

3.4.2 A missing account on promises

So here is a missing snippet indication: a) can (or even should) an account of PMTh be parametrised by the agent's view on promise theory, b) can there be any legitimacy for choosing otherwise than the dominant view on promises (that is the obligational view) and if so, c) how must an agent announce its position in choosing a theory of promises.

4 Concluding remarks

I have outlined a modular way of making progress in the design of an account of PMTh. Two forms of modules, (modular building blocks) are distinguished: account snippet proposals, and missing account indications. Examples of both are discussed.

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A Properties of this paper

The first Appendix contains information which is specific for this paper, the subsequent Appendices provide the necessary explanation.

A.1 Licencing

A.2 MRbv Nopreprint Series Number

This is #4 from the MRbv Nopreprint Series (in brief MRbv NPP#4). In this sequence MRbv NPP#1 is http://vixra.org/abs/1501.0088 (this paper is not explicitly labeled as a nopreprint but it sufficiently meets the criteria as listed below, though it lacks a defensive novelty analysis which admittedly is a deficiency), MRbv NPP#2 is http://vixra.org/abs/1501.0203, and MRbv NPP#3 is http://vixra.org/abs/1501.0231.

A.3 MRbv Document Class

This paper has MRbv document class A in the MRbv Document classification scheme (MRbv DCS). This classification does not include the Appendices of the paper.

A.3.1 Justification of the MRbv document classification

In this particular case the classification in class A has the following motivation:

1. There is no immediate or even intended vision of application or valorisation of the content of this nopreprint. (This rules out categories C and D). The content consists of proposals only which still need to be accepted by being incorporated in a subsequent version of the accounts on PMTh.

2. The views in this work (with the exception of the statements concerning the nopreprint category) primarily have a commentary status and are unlikely to be held as MRbv views with methodological consequences in any future context. (This rules out category B).

3. The nopreprint status is intentional, submission to a (selectively) peer reviewed publication outlet is not intended. (This indicates MRbv as an appropriate affiliation bringing with the need for classification in A B, C, or D).

4. Subsequent academic research on the basis of the content of this work is not foreseen by the author. Subsequent non-academic research, however, is expected.

5. Because of the proposal status of account snippets and missing account indications the results of the paper are at this stage purely conceptual (which is indicative of category A).

A.4 Defensive novelty analysis

A nopreprint ought to be equipped with a so-called defensive novelty analysis (see the explanations below). For this paper I put forward the following arguments:

- The Appendices are not a part of this nopreprint as far as this offensive novelty analysis is concerned.

- The paper contains proposals for elements to be included in an forthcoming PMTh account only, not even the decision for inclusion is mentioned or discussed.

  A reviewer might in principle disagree with either the assertion that a snippet is new with respect to PMAh A-v1.0 (that is [2]) or that a missing account indication is about an account which is not really missing. But it is unlikely that any reviewer for a scholarly outlet would consider it his or her task to make that kind of comparison of this paper with an unrefereed preprint posted on `arXiv.org` by the same author.

- A reviewer might comment on the novelty of the account snippet proposals and the missing account indications. My experience with reviewing is that this sort of comments would be of limited value only. Finding out the relations with existing literature requires much more than having these snippets read by one or two reviewers. It is unreasonable to ask from a reviewer to guarantee the novelty of such comments. As an author I have no clue on how to support that kind of claim either. (And as a consequence no claim of novelty/originality can be based on the inclusion of these snippets and indications in this nopreprint.)

B Formalities and policy statements I: about nopreprints

This Section deals with a range of topics which arise if one publishes research paper-like work in a somewhat unconventional manner. Two aspects constitute a deviation from ordinary publishing for someone with an academic affiliation: (i) the work is performed and posted from a private affiliation (in this case MRbv), and (ii) the work is categorized as a so-called nopreprint.

In my view the nopreprint status and the use of the MRbv affiliation are independent through not entirely unrelated matters. Both aspects require an explanation and to some extent a justification.

I must apologise in advance for the boring length of these considerations. I will include similar texts in further documents (either having nopreprint status or written from my MRbv affiliation) expecting that some gradual evolution to a mature stage wil result in time.

This Appendix and the following Appendix constitute an adaptation of essentially the same content that was included in the Appendices of two earlier nopreprints (MRbv NPP#2 and MRbv NPP#3) that were posted as `http://vixra.org/abs/1501.0231` and `http://vixra.org/abs/1501.0203` respectively, as well as the final Section of MRbv NPP#1 (which is `http://vixra.org/abs/1501.0088`).

The structure of the Appendices has changed by moving all document specific information to the first appendix and having explanations and justifications of terms and concepts postponed to subsequent Appendices thus obtaining a more modular structure, which is more easily instantiated for a new document.

B.1 Nopreprints as a publication category

The repository `viXra.org` publishes so-called e-prints. The much more well-know repository `arXiv.org` publishes preprints and so does the PeerJ Preprint server (see `https://peerj.com/computer-science/`). I will first elaborate on the distinction between e-prints and preprints.

The property of being an e-print labels a technical format and papers on `arXiv` are e-prints as well, and so are the documents posted on In addition to being e-prints documents on `arXiv` unless already having been scholarly published (see below for a definition of this notion) have the status of preprints, which are viewed as publications, tough not as peer reviewed one's. Given the world wide and open accessibility of `viXra` postings I assume that e-prints thus posted qualify as "publications" assuming that fairly general requirements on form and content of such documents are met. (I hesitate to label powerpoint presentations as publications, but that may be an outdated hesitation.) These documents may belong to various classes, including preprint. In this Appendix I will describe a document type for which `viXra` is especially suitable as an outlet. In this section "author" will include the case of a team of multiple authors.

The notion of a publication in a scientific context has the connotation of it

having been peer reviewed and its distribution being performed by an outlet which requires compliance with the terms and conditions of the selective peer reviewing mechanism as entertained by that outlet. Typical outlets are research journals and the proceedings of the occurrence of unique conferences organised under the umbrella of a well-established body or of a well-organized conference series which is held and organised under the responsibility of a scholarly society.

The meaning of publication just mentioned deviates from more liberal and more common definitions which focus on form, objective, and availability, rather than on the presence of generally recognised quality control mechanisms. Derived from this (science context) interpretation of a publication, is the notion of a pre-publication or a preprint. Nowadays preprints in electronic form (that is e-printed preprints) can easily be distributed as widely as their "printed" realizations (successors). If printing is performed within a pay wall the preprint may even turn out to be far more easily and cheaply accessible for a general audience.

Printing increasingly tends to signify no more than (i) having been positively assessed by a selective peer reviewing system of known reputation operating from an equally reputed organization, (ii) having been adapted to requirements imposed by that reviewing mechanism, and (iii) having been posted through the technical facilities (website, ebooks etc.) of that particular organization. Such works I will refer to as having been scholarly published.

Preprints typically are documents that its authors intend to be promoted sooner or later to the published status (just specified as "having been printed" or having been scholarly published). Therefore, although a preprint placed on `arXiv` may never be published (in the sense of being "printed" as just outlined), it has the preprint status on the basis of its author's intentions. A preprint has not been scholarly published by definition, at least not on the date of its appearance (which counts as a publication, though not a scholarly one) as a preprint.

B.1.1 Nopreprint: a preprint-like e-print, which is not a preprint

In the absence of intentions towards scholarly publication posting an e-print on `arXiv` is less plausible given the objectives of `arXiv`. The same remark can be made for the Peerj Preprints mentioned above. The notion of an archive suggests that documents which have already obtained some form of status are preserved in archival mode. Archiving as such does not, by itself, confer that form of status. Now a nopreprint is an e-print (or if one so wishes a paper document that is sent around to an interested readershipp), which intentionally is not equipped with the connotation of a preprint, that is of a document waiting to be (somewhat adapted) and published in a selectively peer reviewed outlet which is under the control of a reputable body.

The classical notion of a technical report has the flexibility to include nopreprints but it fails to exclude preprints. For that reason nopreprint cannot be replaced by "Technical Report". In Academic practice technical reports seem more often than not to have the status of preprints. Another related notion is

that of a postprint, a copy (perhaps differing in very minor ways) of a scholarly published paper is `arXiv`-ed (or posted on the open archival chapter of an institutional website) around the date of scholarly appearance, carrying the relevant information about the official publication, nowadays often preceding appearance on physical paper. Postprints and nopreprints are remote relatives only. A postprint has obtained the scholarly published status that a nopreprint will probably never acquire.

B.1.2 A rationale for writing and publishing nopreprints

Peer reviewed publications go with the claim that science is made up of such works, and that works which in hindsight fail to comply with scientific requirements will eventually be withdrawn. Not every document about a research theme merits that status in the perception of its authors. There is a remarkable focus in science (publicly funded research) on so-called high quality work. Evidently high quality work can only exist in a context giving room for works of lower quality just as well. I will assume that, seen from the perspective of formal science and research, a nopreprint in general (that is by default) will not even potentially contain a high quality work which could have passed all relevant screening just as well. Thus nopreprints are a class of non-high quality works (or at at least non-"top quality" works).

Now one might suggest that nopreprints should be submitted to less pretentious peer reviewed outlets. But this may not comply with author objectives. Obviously the line of argument is risky. If even low quality journals won't publish a paper, or if you don't want it having been published in such a journal why write (and publish as an e-print with nopreprint status) it at all. Many different viewpoints are possible on this matter. I feel that one may (i) wish to see one's "true" (that is scholarly published) research output embedded in (that is to exist in a context of) a volume of works (blogs, news items, scattered comments) of a secondary status, (ii) that one may wish to contribute to that volume of secondary status items oneself, and (iii) that one may wish to do so while paying attention to the working ethics of ordinary scholarly research. For instance nopreprint status provides no justification for plagiarism of any kind (where self-plagiarism must be defined and dealt with in a careful manner), no justification for the misuse of copyright owned by other parties, no justification for defective references to prior art, and no justification for making scientific claims without proper proof or investigation.

B.1.3 Options for nopreprint content

Here are some examples of content kinds from which may plausibly make up the content of a nopreprint.

- Popular descriptions of content selected from one or more scholarly published works.

- Explanations of content of existing published work for a non-specialist (though research aware) audience.
- Providing additional details for the justification and explanation of existing scholarly work.
- Opinions about existing and forthcoming scholarly work.
- Listings of challenges, problems, puzzles.
- Examples of the application of general theoretical results.
- Informative but not innovative applications of theory from one area to another area.
- Results that are considered (by the author) too simple for scholarly publication but which may nevertheless be considered informative for a wider audience as an illustration of known principles.

B.1.4 Nopreprint form versus nopreprint content

Claims concerning the validity of research outcomes which are in any sense risky, that is the author can imagine that readers may dispute such claims because there is more at stake than a mere difference of opinion, must be submitted to peer review on the long run. This is a critical point. Nopreprint status may be a matter of document form, that is non-compliance with ordinary scholarly rules of the game. But it must not be a coverup for "publishing" results without proper checks and balances. It follows from this perspective that nopreprints must be harmless to some extent.

On `viXra` there is room for other works than nopreprints. Nopreprint status is a kind of disclaimer: this work contains, to the best of its author's knowledge, no conclusions that (on the long run) ought to be peer reviewed instead of merely be included in a nopreprint. In other words, a nopreprint is not intentionally unpublished (in the scholarly sense involving peer review) because its author experiences a lack of appropriate publication outlets but because the author sees no justification (or reason, or need) to have it peer reviewed. That is not a purely subjective matter, and a nopreprint author must be open for debate concerning the question if the document must be, as a whole or in part, (in contradiction with the author's original views) be transformed to preprint status, and submitted for scholarly publication thereafter

B.1.5 Defensive novelty analysis needed

A nopreprint should preferably contain what I will call a defenisve novelty analysis. This is an analysis of the following form: for each fragment of the paper (prospective nopreprint), explain why it is appropriate that its content (claim, form) is not submitted for review in the setting of a scholarly outlet. Obviously the argument that it would probably not be accepted is an immaterial argument

at this place. Evidently claims that ought to be submitted for review can be formulated in ways that no reviewer swallows, but that's not the issue. It must not be the case that the nopreprint is a coverup for claims and assertions which in normal research practice need to be submitted for review and compliance with that requirement must be convincingly argued.

B.1.6 Nopreprint publication, a matter of paraconsistency?

As just defined an e-printed nopreprint is a publication and a non-publication at the same time. Publication status is probably undisputed outside the scientific context, while publication status will probably be disputed within a scientific context where scholarly publication is the default understanding of publication. Dealing with inconsistencies without getting these out of the way is the subject of paraconsistent logic and reasoning.

Is paraconsistent reasoning needed to understand the concept of a publication? Inside and outside the scientific context different default settings govern the interpretation of the concept of publication. Outside the scientific context an instance of publication implies neither the presence nor the absence of the application of a reliable quality control mechanism. Inside a scientific context it currently is the other way around. This matches with paraconsistent reasoning in accordance with the so-called chunck and permeate paradigm as proposed in [9]. This paradigm suggests to think in terms of at least two chunks of knowledge, named source and target.

In particular it is useful to consider a theory of "what is a preprint" (in a scientific setting) as the source theory (including the assertion that an e-printed preprint is a publication, though not necessarily a scholarly one). The target theory results by removing the concept of intended submission to peer review as a condition (for being a publication) and by replacing it by a constraint about content that involves peer review differently, i.e. by assuming that peer review is immaterial for the document or for any part of it.

Now the chunck and permeate reasoning strategy (see [9]) allows selective transfer of facts from the source context to the target context. In the case at hand this selective transfer allows one to infer rules and requirements on nopreprints while not being logically "silenced" by the apparent contradiction (peer reviewed AND non-peer reviewed) if source and target theories are simply combined.

B.1.7 Slippery slope risks

Assuming that neither the risk of rejection, nor the absence of a peer reviewed outlet appropriate for submitting a paper (for which a choice between preprint and nopreprint yet has to be made) convincingly justifies nopreprint status, an author might be inclined to favor the nopreprint publication category for the simple reason that this allows working according to a well-prepared plan without the need to "do something about the paper" after it has been published (as an e-printed nopreprint).

Once the writing of a sequence of papers acquires momentum it may become seemingly practical to downgrade potential preprints in such a way that nopreprint status becomes defensible given the paper. The latter says nothing about the tolerance of an author's professional environment about nopreprint publication. Now an author may slowly do away with the objections against nopreprint publishing to the extent that fragments of papers emerge in nopreprints which at least in principle (that is intentionally) should have been submitted for peer review. This is a risk of a slippery slope nature.

In other words: writing nopreprints is (or should be) neither explicitly nor implicitly an expression of criticism on the existing publication outlets. To the extent that `arXiv` policy discourages the publication (on `arXiv`) of what I have defined as nopreprints, I consider that policy to be both useful and justified. There is no need for a preprint repository to accept nopreprints, on the contrary.

B.1.8 Linking nopreprint publishing with a private affiliation

It seems unproblematic to publish a nopreprint from an academic affiliation, and it seems equally unproblematic to publish a preprint (as an e-print) from a private (that is non-academic or non-institutional) affiliation such as MRbv.[6]

I have chosen for the time being, and until convincing arguments against this choice surface, that I will personally write nopreprints from the MRbv affiliation only, for the simple reason that I prefer not to use an academic affiliation for a kind of activity which it may not wish to endorse. To what extent this separation of concerns is feasible (and useful) on the long run remains to be seen.

Nopreprints must live up to codes of conduct that govern academic work, to the extent that this is of relevance for various activities. For nopreprint-style work originating from MRbv `viXra` is chosen as the preferred outlet.

C Formalities and policy statements 2: using a private micro-institution as an affiliation

MRbv is at this stage an extremely small private organization capable of serving as an affiliation for certain types of work. I will refer to MRbv as a micor-institution. Micro-Institutions may have many different legal forms and there are many arguments conceivable in favour of the use of a micro-institution, an just as well there are many arguments against the use of a micro-institution. I won't discuss such reasons at this place but merely state that at this stage the costs and overheads of maintaining a micro-institution (in particular MRbv) are in my perception justified by the platform it provides for the production of a nopreprint series in the area of informaticology. It is very much a matter of learning by doing, however, and it may yet turn out that the legal form of MRbv

[6] I consider it problematic to use different affiliations for posting papers on `arXiv` at the same time, and I do not think that `arXiv` must have that flexibility either. I feel no such problem with `viXra` although I am not posting papers on `viXra` because of dissatisfaction with `arXiv`.

is not optimal for the purposes that I have in mind, in which case eventually the BV status can be "downgraded".

C.1 MRbv document classification scheme (DCS)

The MRbv document classification scheme (MRbv-DCS) for publicly accessible documents and content originating from MRbv has four categories named A, B, C, and D. MRbv-DCS classification is of relevance only for documents with MRbv as the affiliation of at least one of the authors. Classification primarily depends on content and form of a document, but it may also depend on the objectives of work that is reported about in the document. The four document categories are defined as follows:

A: MRbv is used as a preferred affiliation on grounds related to the quality, the style, the objectives, or the form (or any combination of these) of the work. The work has not been carried out with future use within MRbv as a primary objective, however the possibility of such future use is not excluded unless a statement to that extent is included (in which case replacements of the document may be classified under another category).

B: Work aimed at the development of conceptual schemes and viewpoints with the following requirements: (i) these are MRbv viewpoints and must be (intended to be) as stable as ordinary research outputs by the same author(s), (ii) not necessarily leading to, or contributing to, the development of products or services to be offered by MRbv, (iii) but having the potential for being developed into products or services that may be offered by MRbv.

C: Work meant for future use or for development towards future use within MRbv.

D: Work that is directly linked to MRbv practice, e.g. cases, projects, courses, and books or other content which will only be made available against compensation.)

C.2 MRbv specific IP policies and dissemination policies

IP policies and dissemination policies are features which are specifically configured for each document.

1. LICENCE: unless stated otherwise MRbv nopreprints are licensed under Creative Commons 4.0 (BY)
   `http://creativecommons.org/licenses/by/4.0/`. In as far as consistent with this licence the following rules apply in addition:

   - Reference can be made by providing author, title, url on `viXra.org` and year (in this case 2015).
   - Referencing this work is always permitted.

- Although making appropriate reference to this work is appreciated, referencing this work is in no circumstance required, requested, or expected (by the author or by anyone representing MRbv) as a sign of intellectual debt, or as an acknowledgement of priority concerning certain ideas or results.
- However, readers must be aware that copying or incorporating parts of this work in other works without proper referencing may be construed as some form of plagiarism (or otherwise as a violation of CC 4.0 BY) by agents not under of control of MRbv. MRbv reserves the right to agree in public with such claims when made by other parties, in cases such judgements are requested by mentioned parties, but MRbv will not base any claims or complaints on such states of affairs.

2. DEFINITIVE FORM. This work is not meant for publication in any other medium that claims to exert quality control of whichever form. In particular the work has not been and will not be posted on `arXiv.org` in this form or in a more or less similar form. This is a promise in the sense of [5].

3. AMBITION. It is by default my expectation and in that sense ambition that the work reported in an MRbv nopreprint will lead to other works from MRbv that are in part based on this work. These works in combination may evolve to a stage from which documents can be extracted, by selecting and combining suitable fragments that are ready for scholarly publication.

4. The work is `viXra`-ed for reference purposes and for easy and durable accessibility. The paper will not be withdrawn from `viXra.org` but it may be replaced when a newer version is available.