A Terminology for Instruction Sequencing

Jan A. Bergstra

Minstroom Research,* Utrecht

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Abstract

Instruction sequences play a key role in computing and have the potential of becoming more important in the conceptual development of informatics in addition to their existing role in computer technology and machine architectures. After 15 years of development of instruction sequence theory a more robust and outreaching terminology is needed for it which may support further development. Instruction sequencing is the central concept around which a new family of terms and phrases is developed.

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1   Introduction

Here is a description of a subject, for the moment named subject X, that fits within informaticology:

> The theory of instruction sequences originating from the program algebra proposed by Bergstra and Loots in [7] and its application to the development of simplified models for concepts, structures, methods, workflows, and production processes in computer science, in software engineering, and in computing at large.

This description covers quite well what I have in mind with subject X but it is far too unwieldy for daily practice. It is apparent that some problem of terminology and naming may stand in the way of further progress with X. Abbreviating the name to program algebra has the definite disadvantage of hiding the fact that many other program algebras have been designed. Writing PGA style program algebra, and thus making reference to the acronym that was used and proposed in [7] is unattractive on the long run. Doing so invites future authors to delete the PGA part thus implicitly moving, or proposing to

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move, towards the use of PGA as a default meaning for program algebra, a use for which insufficient justification exists at this moment.[1]

In this paper I will propose some novel terminology with corresponding acronyms with the objective to create room for work on X that goes beyond fairly conventional journal papers aiming at publishing mathematical results. In fact I won't come up with a catchy name for X, I could not find one, but I will propose names for topics, themes, and directions of work within X. For each new term or phrase I will mention alternatives as well, thus emphasising that the development of terminology is a two-stage process.

1.1 Inseq and polinseq

I will use inseq as an shorthand for instruction sequence, with plural inseqs.[2] And I propose to use polinseq as a shorthand for polyadic instruction sequence.

1.2 Spinseq and f-spinseq

A single pass inseq (spinseq) has no backward jumps, repeats, or recursion. An important case is a finite spinseq (f-spinseq), the X analogue of a straight line program.

2 Instruction sequencing (ISg)

The core idea behind the following proposals on terminology is to introduce instruction sequencing (ISg) as phrase for indicating the activity of producing an inseq, or a polinseq. Here the inseq or polinseq is meant to qualify as such within the framework of X.[3]

This need not be an activity with a practical objective such as programming is often thought to be. ISg refers to all activities that lead to the existence of a new inseq. Here new may refer to novelty in relative terms, new for the instruction sequencer (ISer), new in a certain context, new because it had been lost or forgotten, or even new in scientific terms, by providing the solution to some known open problem.

As a first alternative to ISg I mention praxiomatic instruction sequencing (PraISg). Here praxiomatic indicates both the axiomatic background of the theory on which ISg is based and the fact that this background determines the

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[1]I cannot exclude that a justification for using the PGA design as a default interpretation for "program algebra" will emerge on the long run but I do't expect that to happen, and it would not necessarily be a sigh of strength of PGA either, rather it would indicate a lack of interest in program algebra as a line of work in theoretics computer science.

[2]An alternative to inseq is IS, which I prefer to avoid for the time being because of its strong connotations from the political scene.

[3]This convention implies that ISg by default imports the background of X. Proposing that default is justified in my view because to the best of my knowledge all other forms of instruction sequence production are commonly referred to as forms of programming. More-over, programming in machine language, a very wide spread form of instruction sequence production, will produce a instruction sequences that qualify as such in the framework of X.

operational (practical) aspects of inseq handling and effectuation as well. Yet other alternatives are: inseq development, inseq production, inseq manufacturing, inseq authoring, inseq writing, and inseq creation. Of these alternatives instruction sequence development (ISD) is a useful one, which may be used on equal footing with ISg. ISD refers to a production process that is likely to be more methodical and documented than ISg.[4]

Below I will distinguish four instances of ISg, that is specializiations of ISg to particular menu's of basic instructions aiming at a confined domain of application: CISg, OOISg, RISg, and ISgMM.

2.1 Combinational instruction sequencing (CISg)

Combinational ISg (CISg) deals with the implementation by means of an inseq of combinational functions. Combinational functions is another phrase for a function from a finite set of Boolean arguments (also called bits) to an finite set of Boolean arguments of possible different cardinality.

Many alternatives are possible for CISg: ISg for bit string functions, ISG for bit vector functions, ISg for Boolean functions, ISg for functions with a discrete domain and range, IGg for multi-valued propositions, ISg for multi-valued Boolean functions, ISg for bounded binary arithmetic.

An important case is the restriction to f-spinseqs (f-spCISg), for which a theoretic account can be found in [16]. Examples of f-spCISg can be found in [13] and [14].

2.2 Object-oriented instruction sequencing (OOISg)

Object orientation in programming combines two different aspects: a dynamic universe of objects linked by connections named fields, and a hierarchical classification of objects used for the disambiguation of so-called methods, a phenomenon called overriding.

Leaving aside the class hierarchy one obtains setting which in the context of X has been specified as a data linkage. Thus ISg over a data linkage serves as a model for OO programming with a single class only. Future work may introduce class hierarchies and the corresponding disambiguation mechanics in the setting of ISg. I propose to refer to ISg over a data linkage as OO ISg, in spite of the fact that the class hierarchy is not dealt with at the current stage.[5]

An alternative to OOISg is data linkage based ISg (DLbISg), or simply ISg for data linkages. Work on OOISg within X was initiated in [5], and has been continued in [15].

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[4]In computer science programming always has the connotation of programming with best possible principles, style, and methods. Preference for program development over programming is a matter of taste. However program development is always about computer programs, while programming has a wider scope, just as program. Indeed programming and program refers to meetings and events outside the scope of computing.

[5]The relevance of OOISg without class hierarchies lies in the perspective of investigating garbage collection mechanisms, including new forms such as shedding (see [9]).

2.3 Reflective instruction sequencing (RISg)

ISg for meta-programming in cellular data structures. The unsolvability of the halting problem is a highlight of the theory of computation. Originally that result deals with the impossibility for certain machines to determine by way of computing certain information about their own behaviour. That is, the power of reflection about itself is limited for a machine that can only compute. Within X it has been a standing challenge to view this theme as a topic about insets rather than as a topic concerning machines. The relevance of this distinction is usually not made in accounts of the basic facts in computability theory. The very similar case of virus detection, however, indicates that such distinctions ought to be analysed with some care. With reflective ISg I propose to denote that part of ISg that leads to functionalities providing information about insets, including the constructed one.

RISg takes place over services that represent cellular datastructures, these are networks of cells which an inseq can scan and change by having one or more heads walk through the network under control of a finite menu of basic instructions specific to the network topology. At each node of the network the head finds a cell that contains an element of a finite alphabet which it can read and change. There may be side effects convening the contents of cells as well as the topology of the network tag come with movements of the head. A Turing (machine) tape is a two way infinite cellular network with at an alphabet of at least two items which allows for a single head and which features no side effects to its head movements. A stack is a two-way infinite network which erases (that is replaces by a fixed element of the alphabet) the values in a cell when moving the head in one of both directions.

RISg work in X starts with [21] and continued with [12].

2.4 Instruction sequencing for Maurer machines (ISgMM)

ISg is particularly suited for theoretical work on processor based machine models with indirect addressing mechanisms. This case has been studied in detail in [10] and papers citer there, which leaves many issues open for further work. The more general framework that has been chosen to investigate this very basic topic in computer science is taken from Maurer [24]. For that reason I propose to speak of instruction sequencing for Maurer machines (ISgMM).

3 Instruction sequence theory (IST)

Instruction sequence, or alternatively, theory of instruction sequences (ToIS), deals with the logic and mathematics of instruction sequences (as meant in X.) I don't consider thread algebra ([8]) to be subsumed under IST. Examples of IST are [6, 18, 19] and [20]. IST has no applications in a practical sense. However, it has applications in dedicated subthemes of X. That is clearly the case for the four instances of inseqs that were mentioned above, it is also the case for the

two less mathematical themes below: ISgM and ISWE. IST may be understood as a branch of Algebraic algorithmics ([25, 23]).

3.1 Instruction sequencing methodology (ISgM)

Instruction sequencing methodology (ISgM) is a topic in X that provides room for explanations of programming methods in terms of ISg rather than in terms of programming. ISgM deals with models of methods (peudomethods) rather than with methods proper. In some cases, however, such pseudo methods may be useful for research on ISg instances, in particular when the construction of complex inseqs is called for. Work on ISgM includes [1, 2, 3, 4].

3.2 Inseqware (ISW) and Inseqware engineering (ISWE)

Inseqware (ISW) refers to all texts and files that together constitute a (model of) a (hopefully) useful software system. ISW is the ISg equivalent of software. The term software is needed to indicate the fact that there is more to a system than one or more programs, ISW is needed when modeling software within the setting of X.

Having made available the term inseqware it becomes possible to propose inseqware engineering (ISWE) as an X based version of software engineering. ISWE refers to a model of real engineering rather than to the engineering itself. However, the model may be somehow realistic in that it may provide tools helpful for instruction sequencing which are used for that purpose in ISWE research which is (in part) based on those tools.

4 Instruction sequences: theory and applications (IS:T&A)

Finally I return to X, with the question what might be a satisfactory name for it. Having such a name at hand is not urgently needed for making progress on X because planned activities concerning X all stay within subthemes for which names and acronyms have been determined above. But it is possible to put forward some options.

At this stage "Instruction sequences: theory and applications (IS:T&A)" provides a fairly good summary of the description of X which can be used as a name for it in spite of the occurrence of a semi-colon, a feature that is rather implausible for a name.

An obvious alternative would be: instruction sequence theory and its applications. This phrase suggests an asymmetry between theory and application that I find less attractive.

For IS:T&A I have indicated 7 subthemes (alternatively called specialisations or simply themes) expecting that in each of these specializations much work lies ahead and that for each (sub)theme having an overall terminology available wil

prove to be helpful. For the near future these 7 themes cover all of IS:T&A, and no expansion of the subdivision of IS:T&A is urgently needed.

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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

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For details see `http://creativecommons.org/licenses/by/4.0/`. This licence is also claimed for the Appendices.

A.2 MRbv Nopreprint Series Number

This is #5 from the MRbv Nopreprint Series (in brief MRbv NPP#5). The other papers in the series are:

1. MRbv NPP#1: "Decision taking avoiding agency", `http://vixra.org/abs/1501.0088` (2015); 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,

2. MRbv NPP#2: "A nopreprint on algebraic algorithmics: paraconsistency as a afterthought", `http://vixra.org/abs/1501.0203` (2015),

3. MRbv NPP#3: "A nopreprint on the pragmatic logic of fractions", `http://vixra.org/abs/1501.0231` (2015),

4. MRbv NPP#4: "Personal multithreading, account snippet proposals and missing account indications", `http://vixra.org/abs/1502.0204` (2015).

A.3 MRbv Document Class

This paper has MRbv document class B in the MRbv Document classification scheme (MRbv DCS). This scheme is detailed in Appendix C. This classification refers to the body of the paper with the exclusion of the Appendices.

A.3.1 Justification of the MRbv document classification

In this particular case the classification in class B 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 terminology proposed in the paper wil be used as a point of departure for further work on instruction sequences and instruction sequence theory within MRbv. There is a commitment from MRbv to al design decisions involved. This indicates class 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). Agreement of any peer review system with the design decisions in the paper is not sought.

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 and intended.

A.4 Defensive novelty analysis

A nopreprint ought to be equipped with a so-called defensive novelty analysis. An explanation of this this notion as well as an explanation of why it is needed in the case of a nopreprint is given in Appendix B below). For this paper I put forward the following arguments:

- The choice of acronyms Ing, CINg, OOINg, INgMM, INgM, IS:T&A is not amenable for criticism by a reviewer. Most acronyms have multiple uses and to the best of my knowledge each of these has other uses as well, though not in the context of informatics and in particular not in the context of software development.

- For new terminology (e.g. inseq, insets, inseqware) by means of appropriate queries in several search engines it has been secured that the proposed use of these terms does not adversely interfere with know use (if any).

- The paper provides a design of new terminology in the context of existing terminology. In practice each of the terms and phrases needs to stand on its own feet, however. The mere fact that a term or phrase fits in an overall design of terminology cannot compensate for problems encountered with its use. Thus there is no substance in the paper other than that it provides a collection of non overlapping and mutually consistent proposals on terms and phrases for particular concepts and notions. Each of these terms and phrases needs to survive in future use on its own, which may or may not be the case. Approval of the overal design by any other agent, reader, or body is not sought, and would not contribute to the defensibility of individual terms and phrases as proposed in the paper.

B Formalities and policy statements I: about nopreprints

This Appendix begins with brief historical remarks concerning the possibly novel ideas that are put forward in this Appendix as well as and in the following Appendix. The remaining part of this Appendix spells out the details an rational of nopreprints as a novel class of papers and publications.

B.1 Remarks on micro-history

The development of the concept of a nopreprint document category as well as of of the MRbv document classification scheme including the form of presentation of such matters in appendices of MRbv nopreprints steadily evolves.

This Appendix and the following Appendix constitute a minor adaptation of essentially the same content that was included in the Appendices B and C of MRbv NPP#4 (http://vixra.org/abs/1502.0204), which in turn derives from 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, which in turn have been derived from the final Section of MRbv NPP#1 (which is `http://vixra.org/abs/1501.0088`).

I apologise for the 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, stable and compact form wil result in due time.

B.2   Nopreprints and micro-institutions

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) which is a micro-institution, and (ii) the work is categorized as a so-called nopreprint.

In my view the nopreprint status and the use of a micro-institutional affiliation are independent through not entirely unrelated matters. Both aspects require an explanation and to some extent a justification. This Appendix deals with the notion of a nopreprint.

B.3   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.3.1 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.3.2   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.3.3   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.3.4   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.4   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.4.1 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 [22]. 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 [22]) 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.4.2 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.4.3 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 micro-institution. Micro-Institutions may have many different legal forms and there are many arguments conceivable in favour of the use of a micro-institution, and just as well there are many arguments against the use of a micro-institution. Here are some arguments in favour of the use of a micro-institution, as well as some considerations that come with the special case of MRbv:

1. A micro-institution may be used as a point of departure for the development of new document types (nopreprints being an example of that) for which an academic institution may not see a role at present.

2. Work performed from within a micro-institution need not be evaluated against the quality benchmarks of a large or reputed institution. It is, however, not easy to state which compromise in terms of quality is acceptable. Doing away written peer review as is done with nopreprints may be one option.

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[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`.

3. Working in a large institution one may not plausibly write about topics that are the primary competence of other staff members of that institution. This constraint induces a highly specialist approach to writing. Working from a micro-institution that kind of constraint is absent.

4. The costs and overheads of maintaining a micro-institution such as MRbv are significant. There may be different justifications for such costs. For instance the micro-institution may operate successfully as a business, but that is only one of a number of options.

   At regular stages the question needs to be posed if there is an adequate equilibrium between the activities performed within a micro-institution and its running costs. It may yet turn out that the legal form of a certain micro-institution (e.g. MRbv) is not optimal for the purposes that its management/owner(s) is actually striving for, in which case eventually its form status can be upgraded if more degrees of freedom are needed or downgraded if the micro-institution happens to be oversized in formal/legal terms.

5. At this stage in my perception the cost of "running MRbv" are justified by the platform it provides for the production of a nopreprint series in the area of informaticology.

6. At this stage I don't know which form of commercial activities within MRbv will be performed eventually (if any).

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 [**?**].

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.