The Future of TeX and TUG

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Abstract

Challenges which face TUG are also those which face all user groups: the question of where TeX will lead us in the next several years as other programs are developed, many with TeX or TeX-like elements behind more user-friendly front ends. What TeX has allowed us to do for many years is now slowly becoming possible in other software. Where will pure TeX be in the future? Will we still be able to use it? In short — What will happen to us?

We must encourage those who are passionately concerned with these future directions. We must support improvements and changes which do not hinder or go against the main guiding principles behind TeX: that it be portable, that it be backwards compatible, and that it produce beautiful documents.

That is our challenge as a user group. To provide the means by which all of us, as users, can learn to adapt to, and benefit from, the changes and refinements which those who do development work are labouring over so intensely. And to provide the means by which we can improve our own skills, our own knowledge in the use of TeX, in order to be proud producers of those beautiful documents.

Introduction

Earlier this year, in June, the NTG, the Dutch user group, held their 5th anniversary meeting. Although I was unable to attend, I did write up a short text which their chairman, Kees van der Laan, read to the audience. That text serves as a starting point for this paper.

The Dutch group were celebrating their *lustrum*, and Kees' own address to the meeting was an account of their history to date: their activities, their successes, and their experiences.

I also wrote a bit about history, TUG's history. We are now in our 14th year. This meeting reflects what we are now: a group of people, with broad interests and diverse applications, where TeX is now truly an international tool for typesetting documents, and exchanging information. People everywhere are using TeX not merely to typeset, but in fact to make sure that their ideas are being clearly understood by colleagues around the globe. It has, in some sense, become a language itself: "People talking TeX".

It sounds odd. But for some, it is in fact the literal truth. For those who attended last year's meeting at Portland (or who read the paper in the proceedings), we were treated to a wonderful display of a TeX application by Raman, a blind graduate student at Cornell. He has a voice synthesizer set up to interpret LaTeX code, both document structure and mathematics, into sound. This was never part of the original plan! People are taking TeX "where no-one has gone before", if I may steal a well-known phrase from television.

Who could have foreseen such applications when TeX first turned up on a computer near you? It was supposed to allow us to typeset beautiful documents. It was supposed to finally make sense of maths typesetting. It was supposed to work within an English-language context, with some facilities for non-English material. Graphics weren't part of the equation, although the hooks were there.

And what do we see today? We have achieved beautiful typesetting — and also some absolutely awful typesetting! TeX is still far and away the best means of representing mathematics — and TeX is also appearing behind the scenes in material which has absolutely nothing to do with mathematical or technical typesetting. As for English — well, that was totally blown wide open at the 1989 Stanford meeting and TeX v.3. Indeed, at this conference audience, we had people representing probably 30 languages and from probably as many different countries. And we are all still "talking TeX". This is our *lingua*

franca. Our means of making this world smaller, of making each person in it closer to us.

Who could have foreseen that 15 years ago? I expect that we are similarly unable to draw a picture of where TEX will lead us 10 years from now.

Challenges which face TUG are also those which face all user groups: the question of where TEX will lead us in the next several years as other programs are developed, many with TEX or TEX-like elements behind more user-friendly front ends. What TEX has allowed *us* to do for many years is now slowly becoming possible in other software. Where will pure TEX be in the future? Will we still be able to use it? In short — What will happen to us?

What is this "Future TEX"?

There has been a considerable amount of time and effort devoted to this issue — the future of TEX — in the past few years. Each TUG meeting has a section on "The Future". There are great discussions and arguments which thrive on various network lists: from comp.text.tex, which is a general TEX list, to ones devoted specifically to the future, such as the nts-l@vm.urz.uni-heidelberg.de, set up by DANTE, the German-speaking user group.[1]

This year is no different: at this conference we heard about the future in a paper from Joachim Lammarsch, entitled "A New Typesetting System: Is it Really Necessary?". A number of other papers were presented in the "Futures" section. These papers in this proceedings will be read ... or glanced at ... or passed over by our membership.

And that raises the question: do we all need to be aware of the discussions on the future? Should we all be expert in the various threads of argumentation which exist? Must we all be informed TEX users, in short? Perhaps ... perhaps not.

I would argue that the TEX-using community is now so large that there are sufficient numbers of people who *are* passionately interested and concerned about the future of TEX, the program. Sufficient numbers of people with a broad range of opinions, some of which are completely different from those of others, who are capable of discussing these issues, and achieving a judicious balance and compromise on just what the future of TEX — and the future TEX — ought to look like.

Does that mean I'm saying let someone else worry about the issues? No. Not at all. In fact, I would say that we should *all* be making the attempt

at understanding the broad outlines of what is being discussed. It's not always easy to read those articles in *TUGboat* — I agree! But as much as possible, we should be reading at least the abstracts, the introductory paragraphs, just so that we are aware of the general ideas. We aren't in school anymore: there are no tests at the end of the year about how much we have understood! We are mainly just users of TEX. But we ought to be making the effort to understand what what some of the problems are, and what some of the solutions may be.

And this brings me to the following: we must encourage those who are passionately concerned with these future directions. We must support improvements and changes which do not hinder or go against the main guiding principles behind TEX: that it be portable, that it be backwards compatible,[2] and that it produce beautiful documents.

But that support should not be blind. We must be aware of what is being proposed, and here I turn to the developers and say to you: you must similarly be supporting the users of TEX by providing information, updates, mini-courses and workshops, on just what is happening, and what you expect to see happening. An absence of understandable communications can only be detrimental: people will avoid what they cannot understand. As TEX users, most of us already avoid learning what things like \futurelet mean! We are masters at not dealing with parts of TEX which exceed our competence and understanding. Unless there is sufficient information flowing back to users, they will similarly avoid using new versions of TEX, or even offshoots of TEX-but-named-something-else.

The range of TEX's influence is extremely broad: some of us use TEX only in a small way in order to do our jobs; some of us, however, earn our livings using TEX. It has therefore become a key element in how many people do their work. And when something has become so critical to so many people, great care must be taken to preserve the overall integrity of the program.

We have spent years acquiring our TEXpertise. We will not give that up easily. We will not willingly throw away 5 or 10 years' worth of experience for something totally different. We don't do it now by switching to something like *PageMaker* or *Word*; why should we leave TEX for something that's different but TEX-like?

The challenge, as I see it, for developers, both commercial and otherwise, is to produce software

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[1] Phil Taylor, "The Future of TEX," *TUGboat* 13, **4**, pp. 433–442, December 1992. See also Phil's paper elsewhere in these Proceedings.

[2] I'd like to thank Phil, whose paper here reminded me of this critical point.

that allows both the experienced TEX user to continue applying that experience, and the new user to more quickly, more easily, produce those beautiful documents. That one can address both the overt user of TEX code, and the person who would prefer to not know what's under the hood.

Can TEX be this tool-for-all-users in the future? I think it can. TEX has proven that, with its own flexibity, and the ingenuity of its users, it can be turned to almost any task. TEX is an incredible achievement, stemming from the work of one man and a group of dedicated and devoted graduate students. It is an extraordinary piece of luck which brought it all into being. Most of us are aware of this past, and feel that the magic must somehow be preserved.

Simply put, TEX is not like any other software program. Granted, it has its gaps, its less-than-ideal elements, but overall, it has a unique place in software history. Our goal must be to maintain that place, and not allow TEX to become a non-portable, non-compatible, fragmented program. Otherwise, it's not TEX!

The Future of User Groups ...

And where do we, as a user group, fit into this future? Because TEX doesn't exist or function in a vacuum. It lives because we are using it. We may have only a passing acquaintance with much of its inner workings, or only wish to have a passing acquaintance with all the discussions about the future of TEX and a future TEX and all that. But we are also a major part of the future of TEX. There is no question about that.

And for users like us — we must continue to improve our own skills, our own knowledge in the use of TEX, in order to be proud producers of the beautiful documents, which are the reason we use TEX.

Because it is not TEX alone which will do this. No program will produce beautiful documents all by itself. It is the *users* of those programs who produce beautiful documents. TEX is merely a tool — an extraordinary tool, certainly — but we are the craftsmen who must learn to use it to its full potential.

Our user groups can help in teaching us how to refine our use, show us ways of improving our knowledge and skills. Our user groups are there to bind TEX users together, to bring us into contact with these better methods and improved skills.

And it is our users who are ultimately the source of that information: the user group is merely the means by which that information can be distributed widely and thoroughly.

That is our challenge as user groups: to be the highway for this information interchange. To provide the means by which those with wide-ranging knowledge and skills can pass their expertise along to others. And to provide the means by which all of us, as users, can learn to adapt to, and benefit from, the changes and refinements which those who do development work are labouring over so intensely.

... and of TUG, Specifically

TEX itself is just a bit older than TUG, by a few years. So let's say it's been out there for about 15 years or so. While a very small portion of users are members of a user group, ours or others, the actual number of users is probably in the hundreds of thousands. Universities are probably still the spawning ground for most of those users, who move with TEX through their research papers and their theses, eventually becoming employed in companies where they either find TEX already in place, or they introduce it, spreading its use even further. There are the academics and scientists themselves who travel from place to place, bringing their research files with them, and invariably TEX is part of that baggage.

And yet — TUG only counts some 2,500 members. If one puts all the other user groups together, they would also probably only account for another 3,000 to 3,500 members. It would seem, then, that our future as a user group should be of more immediate concern to us. How can we attract new members? What about former members? What is our function?

In 1991, I was a member of the committee to devise a mission statement, a short text which would provide some key points of focus for TUG. At the annual meeting that year, held just outside Boston, the Board refined that text. The final mission statement, comprising three main elements, now appears on the inside front cover of all issues of our newsletter, *TEX and TUG NEWS*:

> The TEX Users Group (TUG) provides leadership:
> 1. *to encourage and expand the use of TEX,* METAFONT, *and related systems*
> 2. *to ensure the integrity and portability of TEX,* METAFONT, *and related systems*
> 3. *to foster innovation in high-quality electronic document preparation*

The first point, about encouraging and expanding the use of TEX, METAFONT, and related systems, is directly related to the every-day activities of our user group.

The second point, about TₑX's integrity and portability, concerns discussions regarding the future of TₑX and the shape of a future TₑX.

The third point, about fostering innovation, is one which our publications, *TUGboat* and now *TₑX and TUG NEWS* (TTN), are in part addressing.

The job which I see before us, in TUG, is to find ways to implement these points. But what ways?

For many, TUG is an organisation which publishes *TUGboat*, and has an annual meeting. Last year, a quarterly newsletter, TTN, was added. Still, for the vast majority of TUG members, these seem to be the main features of the user group, with the publications being the main benefit of membership. For a smaller group of people, those who have called the TUG Office, formerly in Providence, now in Santa Barbara, TUG also has meant a phone number and a person who might be able to answer their questions, or pass them on to someone else for an answer. It has been a place where one could buy TₑX-ware and TₑX publications.

But TUG has become more than that. With the advent of the Technical Council (TC), and its various Technical Working Groups (TWGs), TUG is now also showing some of that leadership which our mission statement would have us demonstrate.[3]

Some of the TWGs have become extremely active and productive. Two of them were active at this conference: Yannis Haralambous, chair of the Multiple Language Coordination TWG, led a meeting and George Greenwade, chair of the TₑX Archive Guidelines TWG, introduced the Comprehensive TₑX Archive Network for the first time.

Other TWGs include one on TₑX Extended Mathematic Font Encoding, chaired by Barbara Beeton; Raman, mentioned earlier in this paper, is chair of a TWG on TₑX for the Disabled; and there is also a System Implementor Coordination TWG, chaired by Michael Ferguson. The TC, with Ferguson as chair, has also put out a call, published in the latest issue of TTN, for "Special Interest Groups."

The work being done by all these working groups — all of it volunteer, it must be emphasised — is in progress. Some groups are already at the point where they can say their first tasks have been completed; some are right in the middle of making their recommendations and decisions; others are still gathering information. But the point is: the Technical Working Groups are providing *all* TₑX users with solid effort and results, which will enhance our use of TₑX, our access to TₑX, and which

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[3] A basic outline of the Technical Council and its working groups can be found in TTN 1,3:5-8.

will bring some standardisation and guidelines to the TₑX-using community.

Another area of group activity within TUG is our committees. While it could be said that these have been less dynamic or productive in the past, our current committees are now very effective. We will continue this committee approach to addressing issues which face us, as a user group. I would very much like to see TUG become more decisive, more active, with effective and pragmatic mechanisms in place, so that we can become the TUG that is described in our mission statement: demonstrating leadership in those three areas of focus.

By leadership, I certainly don't mean dominance. Leadership, when we drafted the mission statement, was intended to reassert the place of TUG, the TₑX Users Group, as the oldest user group, the one which began with the core of people involved with that first developer, Don Knuth. We are the *international* user group, and therefore it is expected that we should demonstrate leadership, that we should support and disseminate information about TₑX and TₑX-related developments, that where there is a question, somewhere within TUG's collective knowledge lies the person, or the people, with the answer.

We have not always lived up to that expectation; I think we should make every effort to do so.

We are currently reviewing our internal structure, with respect to representatives from other user groups. Since 1989, we have had representatives from five user groups; we are working to come up with formal mechanisms to include other user groups, to clarify the role of such representatives, to ensure that there is open two-way communications between TUG and other groups.

This is an important issue, even if mainly administrative: TₑX is now a completely internationalised program. TUG's membership directory reads like a world atlas. The people who have come to this meeting are also proof of the international fact: we have people from Russia, from Spain, from Japan, as well as North America. If we, as the international user group, are to function in harmony, then we must have comments and opinions from everyone. And this means providing a forum for such comment and opinion to be heard.

One big feature of our user groups is the extent to which people are volunteering their time, and their work, to TₑX. There are people who volunteer their programs, their macros, their expertise, their information. There are people who volunteer

their time to organise meetings, to write newsletters, to write articles. There are people who volunteer to work in groups, TWGs or committees or other names, to try and solve a problem, provide recommendations, establish standards. The volunteer effort which people make to TEX, and usually without a second thought, is extraordinary. We should remember to be thankful for such generosity.

Another feature of our user groups is electronic mail. I think it's safe to say now that the majority of TEX users are also network e-mail users. We communicate as easily with Japan as with our colleagues across the hall (occasionally even better!). We are able to work as a team, discuss our options, disagree and then come to an agreement, and maybe, at some future annual meeting, we may actually meet one another. The cooperation which makes this volunteer effort worthwhile is simply astounding. Added to this is the fact that we are probably, at one time or another, working with colleagues for whom English is not the first language. And yet it still seems to work.

Of course, it's not all roses out there. There have been some terrific battles (also known as "flame wars") waged via e-mail; it is a medium which can foster tremendous misunderstandings, can be perceived as very hurtful and rude, can allow one to make too hasty a reply, when some time spent cooling off might be more useful, and more effective.

The point I'm making here is that, for all the difficulties which it sometimes appears we are suffering, as TEX users, this is a large volunteer-based community. And while we may want to see things move faster, see services improved, get more for our money, and so on, it will really only happen with the cooperation and participation of volunteers, who are people just like you!

So what is the future plan for TUG? I think it involves increasing our membership; increasing and improving our services to members and nonmembers; serving as that channel, that highway for information exchange. I think our future lies in providing documentation and software on TEX, METAFONT, and related systems.

But more than any of these activities, the future of TUG lies with its members. When members don't renew, we have to ask why. When TEX users choose not to join TUG, or any other user group, we must ask why. When members don't participate in meetings, in elections, in writing for our publications, we must ask why!

There are elections coming up this fall, for all 15 positions on the Board. These will be our second elections. This is one of the most direct ways you have to participate in your user group. Time now for you, as TUG members, to look at those you've elected, to look at what's been accomplished. Election materials will be mailed to all members in the fall. Read carefully, and mail in your ballots.

There are others ways, too, in which you can participate. If you have a particular expertise, an area where you feel you have a certain competence, why not consider letting the TUG Office know that you'd be willing to respond to queries in that area. Even if you volunteer for a 3- or 6-month period, that participation will benefit many other users. I have fielded a number of queries over the years regarding phonetics and linguistics material; I volunteer to continue that effort. If someone wants to join me, that would be wonderful!

Another idea to try out: in German, there's a word — "Stammtisch". It means, more or less, "a regular table set aside for a group". You may have noticed this word appearing in *TUGboat*'s calendar of events. What's happening is a group of people get together on a regular basis, usually in a pub or restaurant, and talk — mainly — about TEX. It's a way of letting TEX users know there's a place where they can find some friends, some fellow users, and talk shop. Or maybe discuss something completely different, like politics, or the weather! But it's an interesting idea which could certainly work anywhere there are TEX users. Why not give it a try? You might be surprised at the results.

And of course, you can participate by talking about TEX whenever the opportunity arises. Recently, I attended a conference for scholarly publishers. Some had heard of TEX; some were actually long-time users. But they had never seen any actual TUG representatives at their meetings — they got two at this one! Peter Flynn, our Secretary, was also able to come to one of the afternoon sessions.

Find out what conferences are going on locally! Many of us belong to other societies; why not send information on their conferences to the TUG Office, if it seems there is a connection with publishing, with typesetting, or with electronic communications. Let us know what's happening in your part of the world. Maybe there's a way we can introduce a TEX presence, either directly via TUG, or via a local user group.

And finally: TUG a member! Bring in an additional member to TUG, and we can discuss a mug or t-shirt for you!