Conditions for Research Funding.

Paul van der Lem

University of the West of England

The future of design research is dependent on attracting an increasing range and volume of funds. Research funding for design and other subjects is based on recognisable patterns. Current design funding levels are uneven; some creative design research for subjects like graphic, textile, interior and fashion design has less funded research recorded than product and environmental design research. However, there are a number of departments in Europe, North America and Asia which have made noticeable funding gains for design research.

This paper is based on published evidence of such funding of design research activities. It seeks to describe principles that have generated abilities to establish and increase streams of funding from governmental sources and the private sector with a stake in design research. Dipping into such streams of research funding, or creating them, is possible through mixing appropriate tactics and strategies of research approaches and methods. Ideas for such approaches are influenced by levels of realisation of the different needs of agents involved in creating worthwhile research. Prime movers for this process are of course the individuals concerned, but obtaining access to research resources, including time allocation, depends on the academic infrastructure in which people work. Such infrastructures are influenced by ideologies, which in the main only consider design research funding worthwhile if the work is evidently relevant to aspects that increase the status of their operations. The crucial part of this equation, to supply the economic conditions for research, is therefore dependent on individual ability and acceptable aspiration levels. These are based on utilitarian concerns on a tactical level within an overall ideological framework that sets conditions for design research funding. Successfully tapping various and continuing research funding streams is repeatedly done by a number of design researchers. Others who also like to do funded design research have to familiarise themselves with tactical aspects of focusing research and the strategic capability to cluster efforts in order to steer emerging research philosophies towards local and international recognition.

Useful insights to find starting points to deal with these parallel interests in developing research ideas can be found in the theoretical framework of action research. Initial ideas for project development are based on questioning how a potential research concept might fire the enthusiasm of an individual while looking at the same time how such an interest might become useful for others in relevant corners of research applications. Once initial ideas have been tentatively formulated, it becomes important to get potential users involved (even hypothetically) to see to what extent the research objectives might accommodate the needs of potential users. Research frameworks which aim to fund pure research as well as potential commercial interests follow similar patterns. Research methodologies to realise the aims of research projects, once formulated, drive the operational dimensions to complete research.

Research philosophy to position beforehand the research in an academic or industrial setting is often ignored. A driving force for success is creating the operational as well as the social and financial conditions to do research. This includes possibilities to generate research worth patent applications for art and design (an expensive investment after research project completions). Such ventures are usual in science and engineering but not yet common in art, media and design within university organisations. However when design research creates sufficient volume and quality, contract research and pure research need to protect their investments.

Conditions for research funding

Use a web search machine with key words: "design research funding" and it generates starting points to glean an insight about the state of affairs. Data identify a range of agencies with advice about access to funding for research in general as well as research for specific subjects and topics, including design research. Web and paper based information indicate two main directions to search: governmental funding and private funding routes, each with national and international dimensions.

There is however a direct link between these two sources. Governmental funding is regularly awarded with the condition that funding from other sources is evident. This is often expressed as "matching funding". Less directed but equal demanding conditions for governmental funding are also given by stipulating that main sections of governmental research grants are seen as core funding, to build up or maintain a research infrastructure capable of attracting funding from other sources. In simple language both conditions mean that successful researchers must give evidence that they can at least double their money from governmental grants through other sources. Subsequently many Research Foundation grants and industrial research contracts are awarded for direct costs and do not reimburse research activities expected to be funded by government. Design units which do not take notice of such funding patterns will find it difficult to maintain a research culture beyond occasional allocation.

Searches for specifics of funding opportunities for design research reveal that architectural, construction and manufacturing design research have traceable networks of funding possibilities with evidence of regular funding success. Other design disciplines, graphic and media design, fashion or textile design can get funding, but track records of success are more diffuse, probably because they have not published developed research philosophies in tune with ambitions of potential funding organisations. Looking at the focus of current interest of funding agencies for research is helpful in making applications. Most of research funding opportunities for design (either from government, industry or research foundations) seeks to stimulate research for specific directions such as:
 - *user orientated research*, to improve benefits from the design result.
 - *need orientated research*, about the market or marketing a design
 - *design process research*, to become more efficient in making a design
 - *education needs research*, to improve training for the next generation of designers

Other directions for research are of course possible, but require careful drafting to satisfy the conditions of specific aims which govern funding agencies. Seeking funding sources to investigate a personal hobbyhorse is therefore possible, but such requests have to be cast within the philosophical framework of the funding agency.

Looking for examples through questions about what, how much, where and by whom successful funded research takes place, is also traceable. This leads to

quite a number of University based schools and some commercial design places. It involves sums which are minor and major. The total of research funding for design is a multimillion business. Ability to attract sufficient research funding is more and more relevant for the wellbeing and status of whole design departments. This paper looks at underpinning patterns sustaining research cultures for today and our future.

Indicators about the volume of research funding

Most research Councils have websites which list their funding allocations with specifics about subject, topic and place. Several of these national websites are in English or have an English section. International organisations concerned with research or the economy give comparative insights about volumes of research spending with emphasis on relationships to good practice. Such statistics cover general and specific research areas of most developed and many developing countries in the world. For example German research funding is listed among the highest in Europe with 2.5% of GDP. This national figure breaks down into smaller units. Germany's research Council (Deutche Forschungs Gemeinshaft) websites list for example that from 1999 to 2001 Berlin University and non-university institutions in Berlin attracted a total of 307 million euros for research. Another area, Munich, gained 243 million euros for research. These are substantial sums traceable to research funding for specific departments and projects. Design research funding in Germany ranks high in electronic, engineering, architectural and product design, but lower in other design disciplines taught in art school based design departments.

The same is true in the UK. Total sums are lower than in Germany since the UK spends 1.9% of GDP on research and the volume of the GDP is smaller. However the totals run into hundreds of millions pounds available each year for researchers who know how to tap into these funding streams. The Arts and Humanities Research Board in England (www.ahrb.ac.uk) covers design research in art and design disciplines. Design researchers can make applications through other Research Councils and Boards but then they compete with subjects and philosophies about research defined and managed by disciplines like Social Sciences or Engineering.

Websites of governmental funding for research are regularly updated, detailing information about the various grants available for design research with accounts of institutions and projects that have been successful in attracting funding. National newspapers work regularly through award lists per institute, compiling funding levels over several years, and compare results at university and subject levels (www.EducationGuardian.co.uk & www.thes.co.uk). Reviewing funding success for design research reveals that more than half of university and non-university based departments in Germany and the UK do not gain significantly from governmental funding for research. It seems that knowledge of how to work the governmental funded research system is not evenly distributed in our discipline within the UK or Germany.

There is also information on the web about EU funding for design research. Researchers outside the EU can get access for such funding if they work in a joint venture with an EU based partner. But the database is more difficult to penetrate for design as a discipline. It is mainly accessible through topical definitions as a result of global political strategic decisions to fund research. However research funding for design within international governmental dimensions like the EU is available in large quantities. Currently most goes to electronic design, manufacturing, engineering and product design with a significant chunk for creative media design. Much of these research awards are for "near market research" with very short lead times calling for evidence of commercial and economic adaptations of results within a few years, through partnerships with private companies.

The USA allocated 2.8% of its GDP to research. Various databases like: *the national endowment for the arts* and the *isdesign.net* publish design resources lists which include patterns of research funding. However as in Europe many design disciplines do not generate as yet a lot of design research funding. For example, the Institute of Design has compared data on the funding of Doctoral students. The majority (60.7%) receive funding but only 14.3% of survey respondents received support for design programmes.

Data from Asia for funding of design research is available in English at macro level from international agencies like the Organisation for Economic Cooperation and Development (OESD) in Paris. But specific details below national levels are more difficult to quantify, when information is not in English. Some international accessible sources like the biannual Asian Design Conferences are a main international indicator for the state of design research in the Pacific basin. Their proceedings indicate that most design research projects take place for industrial development. The main thrust of papers comes from Japan, Korea and Taiwan, but there is also input from Europe, the US and Australia.

Absolutes and ratios of research funding

Success in research funding is measured by economic agencies in ratios of volume of funds compared to other income. This leads to statements of a percentage of GDP. It also leads to measuring university departments' research income against their teaching income. Such ratios or percentages give an immediate indication what the current level and relevance of funded research is within a particular setting. This also allows setting ambitions for research funding achievement which are realistic for specific universities. Ratios for funding influence the work and the status of all departments including Design. Subsequently the jobs of staff, their career trajectory and the quality of teaching students will depend now and in the near future more and more on abilities to attract funding for research. Design departments do not only have to know how to do research but increasingly how to generate research income beyond an occasional allocation. Research policies to

establish defensible targets for specific situations are a major tool to enter the research game at local, or national and international level.

For example the total governmental research income for English universities last year (2002/03) is equivalent to one third of their teaching income. If funding for degree programmes outside universities is added, research funding measured as a proportion of teaching income drops to 30%. The ratio 3 to1 is only for UK governmental funding for research. The expectations for research are that matching funding has to be gained from other sources such as industrial funding for applied research. That means that actual research income for English universities covers a total sum which is at least half, going up to two thirds, of all teaching income. A sobering thought as a norm for design research. However as said before research funding is not evenly distributed.

About 60% of all universities in England were last year not able to reach a level of research income which covers a sum which is at least half of its teaching income. Consequently the remaining 40% of universities include a number which can double or triple their teaching income with research income. Such a pattern of funding indicates that research tactics and strategies are very different for staff in different places. The rules of the research funding game are actually not that complex. The situations are complex in which design departments have to deal with internal and external ambitions or obligations to pursue research and the means to do this.

Using ratios as norm bypasses concepts of size or relative wealth of a country. Looking at the published figures in England reveals actual figures but comparing different enrolment numbers of students and different portfolios of subjects is laborious. Ratios of success in attracting research funding compared to teaching income is however a simple concept and transferable to other national situations. Simplifying total patterns becomes easy and allows individual design departments to position themselves in the market for skill development and intellectual training to support education and preparation for professional practice in relationship to the business of generating new and useful information for future developments.

Research funding achievement for universities and departments as well for individual researchers can be roughly grouped into below average for attracting research, average and beyond average. More than a third of English universities (this excludes the other parts of the UK: Scotland, Wales and Northern Ireland) gain research funding below the national average. Less than a third hover on the average. A bit more than a third of all universities get sums which are more than 50% of the total teaching income. Calculating this through the matching funding principle means that these institutions earn in economic reality the same from research as they do from teaching. The volume of star research universities is revealing. 10% of all English universities gain higher governmental research funding than 75% of their teaching income. Matching funding doubles that sum. The three top universities manage to attract about 150% additional state income from

research, which translates into three times more funding for research than from teaching.

These indicative ratios can and are used as norms for research departments in universities which rate high or low as research institutions. What is currently alarming is that design research in England gets in proportion at best about 20% of the average levels of available research funding, often far less. It certainly begs questions about developing further ideas and principles which might rectify this situation somewhat for design research in the future. Of course arguments can be confused by stating that design is not such an expensive subject as nuclear engineering. Funding teaching for degree level using expensive laboratories is more expensive than for courses which are in the main book based. Design as a discipline is costed somewhere between the high and low cost courses: the principle is a ratio between teaching income and research. That means the design disciplines have to develop their ability to attract research funding in larger quantities than has been done before. Research philosophy development should not only concentrate on methodological development but also on strategy and tactics which include funding as a useful issue for our future

Research strategies and funding

Research funding became significant with the scaling up of academic and industrial research. The moment it became associated with commercial, military and national status issues, research strategy came into its own. Governmental legislation has and is used strategically to promote and sometimes force research ideas forward as a tool for prosperity. For example most if not all research funding by the European Union is driven by strategic considerations to advance and enhance the position of particular developments considered desirable by the administration. The result is targeting resources, which implies that those activities outside the targets will never get access. Hence the uneven patterns in research funding which follows perceived political allocation success. Research funding in other industrial countries follows similar patterns. The strategic issues always revolve around developing research ideas, desirable to take up as successful ideas by the administration which controls funding. Strategic developments operate on international, national, regional, local and departmental levels.

The core concepts used for strategic considerations are a combination of tradition, based on previous evidence of achievement, and innovation. Both are packaged for subjects, subject groups, research teams and individual researchers on the basis of generating trust in the repeatability or scaling up of research success. Innovation strategy is rooted in wishful thinking based on ideas of developing previously known and unknown technologies to develop a new market, or create evidence of cultural superiority in academia for commerce, industry, communication, transport and military purposes. Positions are taken up to do pure or fundamental research and different lines of applications of research, called near market research. Such positions generated by the doyens of research are often presented as strategic

opposition of particular research arguments. Reasoning for pure or blue sky research is based on ideas that there must first be something to apply. Pure research is substantiated by historical evidence about the random aspects of (sometimes unintended) major discoveries in the past. Applied research tends to depend on linear economic arguments. Working around the political aspects to generate funding agreement for specific types of research, is by using tactics to maximise potential for navigating successfully through strategic dimensions to trace accessible funds for research.

Design research funding tactics

The tactics of using or adding to the development of, or setting up and maintaining, research funding are in detail specific to situational dimensions of place, time and subject. Most funding sources identifiable through a web search list conditions. Generating research funding always starts with establishing patterns of interest and involvement of the stakeholders in a potential research project. Basic ideas for this are elaborated in *participatory research* principles. Look at the characteristics and create clarity on the profile of the client who might fund research and also manage the characteristics of a potential user of the research results. Definitions must be based on ideas of purpose of the sponsoring organisation or individual. Get a convincing and justifiable articulation of potential, even for imaginary users of research results. The impact or likely success of the proposed research direction must be articulated in a way which fulfils the level of rationalisation of the funding agency.

Definition of the user and impact allows further development, either on the macro levels of linking tactics to strategy or on the micro levels of actual research operations. The scale of the conditions in which one has to work dictates to what extent these definitions have to be specified. Small grants do not require earth-shocking results. They require either evidence of solid start-up research or promising exploratory research work likely to lead to more substantial follow-up with larger research projects. Large grant conditions already define expectations about the scale and potential impact to a significant extent. A problem for most researchers is to get definitions right for the medium-range funding. Relatively new subjects for research funding, like design, can easily be submitted in related funding infrastructures if specific design research funding is not readily available. Funding for design research bridging with other disciplines needs relevant and workable research partners. The problem for this is not access to funding but establishing and managing partnerships, including patent applications. Learning the cognitive values of the professional language in the associated research disciplines is essential. Success lies often in ability to develop worthwhile friendships with individuals working on the fringes of their disciplines, because that implies links within and outside their disciplines.

However all this is project-based. Repeatable core funding is something different. That is only available when the volume and duration of individual research projects can be substantiated, with authority, as a continued stream

of worthwhile activities. On a strategic level such substantiated views can then be transformed politically by securing also a permanent research funding stream. The tactical arguments are around the need to maintain a critical mass of researchers and an infrastructure to maintain continuation of the stream of individual research projects. Such infrastructures for research funding in developed countries cover networks of professional bodies, universities, research councils, research foundations, commercial and academic research arrangements. Developing countries have a similar pattern but with fewer agents and less volume. However in developed and developing countries arguments always depend on perceived quality gains of volume and status of individuals involved as researchers. To substantiate this it is necessary to go beyond the ambitions of individual university departments and share status development with academic and professional bodies at national and international level.

References

British Art and Design research funding awards with details of each allocation over the last three years: http://www.ahrb.ac.uk

Daalder. Hans, and Shils. Edward, (Eds). *Universities, Politicians & Bureaucrats*. Europe and the United States. Cambridge University Press 1982. ISBN 0-521-23673-8

European electronic exchange portal for research including design: www.alphagalileo.org

European portal to search for expressions of interest in possible R&D projects: http://eoi.cordis.lu/

The Guardian, one of he UK national newspapers, manages a detailed subscription database on educational issues which includes funding analysis for Higher education see www.EducationGuardian.co.uk

German research funding council website with directions in English to trace annual funding allocations for research and more general links to subject areas like design: http://www.dfg.de/en/news/press_release_2003_27.html

Organisation for Economic Cooperation and Development (OECD) indicators: *Education at a glance 2003* ISBN 92-64-10233-7 see also: www.oecd.org

The Times Higher Educational Supplement, part of a UK national newspaper group, manages a subscription database on educational issues which includes funding analysis for higher education see: www.thes.co.uk

Tuomi. Ilka, *Corporate knowledge*. Theory and practice of intelligent organisations. Metaxis 1999, Helsinki. ISBN 951-98280-0-1.

US based private portal for research funding and awards:
http://www.ideasfactory.com/funding_awards/links/

US based Universal Design Resources list of the National Endowment of the Arts: www.nea.gov/resources/Accessibility/UDesResources.html

US funding for education and research in the design profession:
http://www.isdesignnet.com

Van der Lem Paul & Wongpang Prayoot, *Integrating knowledge to increase national economic power.* Journal of the Asian Design International Conference. Vol 1. 6th ADC Tsekuba 2003. Asian Society for the Science of Design ISSN 1348-7817