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# Design, Needs, and Aspirations in International Development

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**Abstract.** As with other forms of social change, international development requires deep changes in human attitudes, skills, and values. Traditional design, however, stresses convenience and accommodation of users. Thus, while development requires human change, designers seek to avoid any need for people to change. This mismatch between the demands of social change and the mainstream attitude of design is at the heart of a range of persistent challenges in ICT for development. I propose that the problem can be addressed in part by shifting from an approach based on needs to an approach based on aspirations.

**Keywords:** ICT4D, ICTD, design, aspiration-based development

## 1 Introduction

In honor of our host country, I begin with a brief overview of the modern history of Indonesia [22][23]. Indonesia gained independence in 1945 or 1949, depending on which of two events you count: It first declared independence immediately after the end of Japanese military occupation in 1945; but formal recognition of independence by its Dutch colonizers came only in 1949. Indonesia's first president, Sukarno, ruled as an autocrat, and he presided over a politically motivated mass murder that left half a million people dead. His successor was Suharto, who ruled from 1967 until 1998. Though Suharto was eventually undone by his authoritarianism, corruption, and nepotism, he nevertheless oversaw a period of rapid socio-economic growth. Suharto transitioned the country to a capitalist economy under which per capita GDP went from only US\$56 (2016 US dollars) in 1967 when Suharto took power, to \$1,137 in 1996, two years before the Asian financial crisis led to his resignation [25]. Suharto also fostered government institutions as well as a range of corporatist civil society organizations. Partly as a result, the period of his reign saw a 20-year increase in life expectancy, a 60% decline in infant mortality, and widespread improvement in education, with primary school enrollments that grew to above 90% with little gender disparity. Since Suharto, there has been significant democratization, with election reforms in 1999, direct elections for president since 2004, and several peaceful transfers of power to leaders that increasingly stress the value of democratic governance. Meanwhile, economic growth has continued: Indonesia's per capita GDP was \$3,500 in 2014 [25].

In just this brief history, we see a multifaceted story of socio-economic development. There was economic growth. Education improved. Democracy appears to have strengthened. But, what I want to highlight in each of these changes is the human element. Economic growth requires improvements in citizen skill and good regulation. Democracy requires strong institutions of governance and popular belief in self-determination. Gender equality requires education for women and maturity among men. Thus, the underlying causes of the country's transformation were significant changes within the people of Indonesia – from rural farmers to military generals, from NGOs to political parties. Indonesia thus provides an excellent example of the idea that the socio-economic benefits of international development are clearly and crucially dependent on human development, both for individuals and for society as a whole. There is no social change without a change in people.

The importance of human development may seem an obvious, unremarkable point for all of us, a community that concerns itself with international development. What I would like to suggest, however, is that the need for people to change runs completely counter to another community that we are also concerned with – the community of design.

Designers tend to see their goal as the creation of goods and services that are pleasant to use and convenient for people – that is to say, design explicitly avoids asking people to change. In his best-selling book, *The Design of Everyday Things*, Don Norman begins with a rant against badly designed doors: “I push doors that are meant to be pulled, pull doors that should be pushed, and walk into doors that neither pull nor push, but slide... I see others having the same troubles—unnecessary troubles” [13]. A well-designed door, he continues, should be so obvious in its use that people do not need to learn anything new or change their normal habits. The good designer's goal is to design things so that people can remain as they are. Norman writes that good design “puts human needs, capabilities, and behavior first, then designs to accommodate those needs, capabilities, and ways of behaving... *We have to accept human behavior the way it is, not the way we would wish it to be*” (emphasis mine).

Norman is one of design's most influential spokespersons, particularly among designers of computer systems. His book is frequently assigned in classes about human-computer interaction. At the school where I teach, students absorb the principles he espouses and strive for “ease of use” that gives users what they want. This stance makes perfect sense if the problem is the design of doors, radios, cars, mobile phone apps, and other things whose goals are to deliver efficiency, convenience, and pleasure. But how appropriate is an ethic of accommodating people as they are, when the goal itself is to change people?

## 2 Accommodating Non-Literate Users

In 2005, I began working with a colleague, Indrani Medhi, to see how we could use technology to support the women residents of a slum community in the Jayanagar neighborhood of Bangalore, India. Applying the principles of human-centered design,

we immersed ourselves in their daily lives, interviewed them about their day-to-day needs, and looked for problems that we might address with technology. It quickly emerged that the women wanted a reliable way to find informal work as domestic servants. However, because many of the women were non-literate, they could not read classified ads in the newspaper. They relied on word of mouth to hear about jobs.

This seemed like an opportunity for design: We imagined a computer kiosk housed in the office of a local non-profit organization that we partnered with. The kiosk would provide access to a database of jobs, which the women could browse. The critical element was the interface. Since most of the women could not read at all, the system would require what we dubbed a *text-free user interface*, designed specifically to be navigable by non-literate users.

Again, following good human-centered design practice, we prototyped various designs, asked potential users for feedback, and iterated over several months. We found, for example, that line drawings were more effective than photographs in conveying ideas, because they were understood to represent a class of things (or actions), rather than a specific instance [10]. We found that there was a spectrum of illiteracy and that many otherwise non-literate women were nevertheless familiar with numbers [11]. We found that the women had no mental model of how relevant information would up in a computer, and so it helped to show a video that demystified how the whole system worked [12]. In a formal evaluation, the final system worked just as we had hoped, with 100% of a group of non-literate participants being able to navigate the user interface to find jobs of their choosing.

When it came to implementing the system and matching women with actual jobs, however, we ran into a host of unanticipated challenges [9]: The women often lacked skills – cooking specific dishes, or using a vacuum cleaner – that employers sought. They also needed to learn basic standards of professionalism, such as providing advance notice if they had to cancel. We also faced challenges with employers, mostly middle-class urban families. They could be stingy with pay or had degrading requirements, such as prohibitions on toilet use. Meanwhile, we – a partnership of researchers and the non-profit organization we worked with – needed to develop the institutional capacity to recruit employers, train employees, and negotiate terms between them. For two years, we worked to pull these elements together, but the total non-technical effort vastly outweighed what was required to design, build, and maintain a computer kiosk. Ultimately, I came to the conclusion that, at least for the problem of job placement with this particular community, text-free user interfaces were not solving any of the key issues. Had we instead focused entirely on the human infrastructure for job-matching and job performance, we would have provided something more meaningful for the women.

So, though we had designed a good technology that served its purpose, a host of additional human changes were more critical for the ultimate impact we sought. The employees required training; social norms among employers had to shift; and we needed to build an institution that could support the many moving parts of job-matching in the informal sector. Text-free user interfaces failed to affect those issues one way or another, but not only that, the real challenges did not even come up during the human-centered design process.

Furthermore, it could be argued that the underlying project itself was limited in its conception. To be sure, there is some value in helping non-literate people gain information that is otherwise only accessible to the literate. But, if the larger goal is socio-economic development, helping people to become literate might be a worthier goal. In searching for a technology solution that would accommodate users, we neglected to consider the ways in which people might need to change to achieve their larger objectives.

### 3 Not Enough

The story of text-free user interfaces is just one example, but it exemplifies many of the challenges of computing for international development. First, it reconfirms one of technological determinism's commonly noted flaws, that *technology* is not enough for meaningful social change. Text-free user interfaces by themselves are not enough to solve the original problem of women finding informal work [9]. SMS messages by themselves are not enough to raise community health worker performance [3]. Some individual capacity is needed. Some oversight and management is required. Some institutional support is essential.

Second, *design* is not enough, even when the design is human-centered, culturally appropriate, and participatory. Every design innovation that went into text-free user interfaces was based on the wishes of, feedback from, and evaluations with potential users, but as long as the designed output was a physical artifact or a process, no effort was put toward changing people. With changes limited to the external environment; the internal world of human attitudes, skills, and values remained unchanged and therefore, none the better. The same could be said for well-designed laptops which still fail to educate children [2], mobile phones which divert family funds away from school and nutrition [4], or any of a range of ICT-for-development projects where a technology is designed to meet immediate needs.

Third, *agency* is not enough. Individual agency is made much of in international development [19], but as important as it is, naïve conceptions of it also leave people as they are, no better able to take advantage of “opportunities” made available to them. Text-free user interfaces may present non-literate women with more job options, but the set of jobs they qualify for is no greater. Social media affords more people the option to “friend” national leaders, but whether those requests are reciprocated depends on prior relationships [21]. Massive open online courses offer free learning to anyone with Internet access, but completion rates are dramatically skewed toward college-educated professionals – i.e., those who have the educational foundation and the leisure time to learn on their own [18]. In other words, the ability to choose – even among good options – is not a guarantee of positive social change.

### 4 Problem-Solving, Neoliberalism, and Needs

Given the wide gap between the accommodationist ethic of design and the human change underlying international development, it is a wonder at all that we should

expect the former to impact the latter. But, design and development share common tendencies, and these apparent similarities bring the two fields together.

The convergence begins with *needs*, something that both development and design have an interest in – an interest that arguably borders on fetishism. “Needs assessments,” for example, are a beloved activity of both technology designers and development specialists. Much of the rhetoric of both development and design builds on the higher moral ground that comes from addressing human needs.

Then, a focus on needs leads to problem-solving as the high-level approach. International development, of course, seeks to solve some of the greatest problems of human civilization – poverty, oppression, and injustice. Meanwhile, design makes explicit claims that it has unique methodologies for problem-solving. So, it is not surprising that development should turn to design for new approaches, or that design would see its methodology as applicable to development. The well-known design firm IDEO, for example, published “a step-by-step guide that will get you solving problems like a designer,” with the following opening sentence: “Embracing human-centered design means believing that all problems, even the seemingly intractable ones like poverty, gender equality, and clean water, are solvable” [7].

Finally, in their solutions, both design and development tend toward neoliberalism. International development, at least as practiced by Western multilateral organizations, is widely known for pushing the “Washington Consensus,” a set of principles that emphasizes economic growth via open trade and capitalism [24]. The idea is that needs such as food, shelter, health, and income are best met by the invisible hand of Adam Smith, a hand which moves according to individual choice acting on selfish impulses. Design, to the degree that it thrives on consumerism, often adopts these values implicitly. This is not to say that design cannot exist outside of a capitalist framework, but design has a natural affinity for individualistic solutions. The affinity becomes clearer when development itself is unabashedly neoliberal. For example, the rhetoric around “bottom of the pyramid” social enterprises espouses the free market as a solution to poverty *and* puts an emphasis on customer-centric design [17]. Not surprisingly, IDEO’s design guidebook makes frequent references to social enterprises [7].

To summarize, despite what seems like a mismatch between design’s desire to accommodate people and development’s objective of social change, there are natural alliances between the two fields. Long before any explicit interest in design, international development was already focused on needs, on problem-solving, and on neoliberal systems; design in many ways compounds these biases.

Of course, it would be folly to suggest that good things have not come from addressing needs, solving problems, or unleashing economic growth. Yet, it is also true that these approaches are not enough and that they can have harmful side effects. Whatever its benefits, the needs-based market-driven problem-solving paradigm leaves much to be desired.

## 5 From Needs...

The pathologies of the free market are well-known, so I will not belabor them here except to note that many of the challenges of design for development are inherited from the larger context of globalized capitalism: To the extent that solutions remain within the bounds of goods and services that individuals freely choose or not, approaches that involve collective action or that push people to change (other than through consumption) are largely neglected.

What remains to be considered are the challenges of needs-based problem-solving. As above, the focus on needs and the problem-solving mentality go hand in hand. Every unmet human need presents a problem to be solved. The core issues of international development – hunger, illness, ignorance, oppression, unemployment, and so on – seem to call for well-designed solutions.

Without impugning problem-solving altogether, however, we can nevertheless acknowledge that the language of needs and solutions comes with biases, which when amplified by the global machinery of international development, can lead to systematic difficulties.

The *Oxford English Dictionary* defines “need” in many ways, but one of them is “violence, force, constraint, or compulsion, exercised upon a person” [14]. This definition is consistent with the kind of needs that international development is concerned with, and it has two key characteristics: First, it evokes strong negative emotions such as fear or anger as a response. Second, needs are urgent and episodic by definition. Dire needs cannot be indefinitely sustained – they are either extinguished through satisfaction, or if long unmet, they kill their hosts.

The fear and urgency of needs pushes us toward packaged solutions. Hunger demands food. Illness demands treatment. Ignorance demands information. And if we view international development as one long succession of needs, it is tempting to respond with a succession of quick solutions – solutions that are easy to replicate and deploy. It is no wonder that so much of international development seems to be about providing rations, dispensing pills, or in the case of ICT, developing apps for smartphones. We allow the urgency of needs to dictate the timeframes in which our solutions must fit.

## 6 To Aspirations

Are there alternatives to needs-based problem-solving? I would like to propose an approach based on nurturing aspirations [21]. Turning again to the *Oxford English Dictionary*, an aspiration is “steadfast desire or longing for something above one” [14]. This concise definition captures the three elements that make aspirations what they are: they are a kind of *desire*; they are *persistent*; and they aim for something *higher*. Human beings have many other desires – some are fleeting, some are mundane, some are undesirable – but aspirations differ because of their long-term, growth-focused nature.

The strengths of an aspiration focus can best be seen when contrasted with needs-based approaches [20]. Compared with the negative associations of needs, aspirations have positive valence. Compared with the fleeting urgency of needs, aspirations are long-term. Aspirations are thus a stronger basis on which to build sustained effort and action. Needs tend toward quick problem-solving as an approach, but aspirations are more given to long-term engagement and people-nurturing as a response. And where needs are met with goods and services – often, physical goods that ultimately perish; aspirations nurture abilities and shift attitudes, which endure within individuals and are often propagated to future generations.

At one level, an aspiration-based approach is not that different from what thoughtful theorists and practitioners have asked of development for many decades. As the popular saying goes, “Give a man a fish, he eats for a day; teach a man to fish, he eats for a lifetime.” Focusing on aspirations is very much in line with this popular dictum, except perhaps that instead of necessarily teaching fishing, one would mentor people toward their own aspirations.

But, aspiration-based development also has additional connotations. For example, instead of needs assessments, why not perform *aspiration assessments*? Over the past several years, I have asked people from all over the world in a range of socio-economic strata a single question, crafted carefully to elicit aspirations [20]: “Of those things that you have some control over, what would you most like to change about yourself or your life over the next five years?” Respondents mention desires such as, “to get a better job and be financially stable,” or “to continue with my education in college,” or “to help and educate kids and the poor.” These are all descriptions of positive, long-term desires, and therefore expressions of aspiration. If one simple question can reveal this much, it bodes well for what more in-depth investigations could yield. Much more work could be done to develop and formalize aspiration assessments.

An aspiration focus also keeps the spotlight on the social forces that might be brought to bear on a problem. Healthcare, for example, is a frequent concern of international development. Needs-based approaches tend to focus on specific illnesses, their treatments, and technologies and processes to improve treatment delivery. It is all too easy to ignore the human stakeholders. An aspiration-based approach, however, would begin with people – with the dreams that patients have for themselves, the aspirations of patient families, and the ambitions of healthcare workers, any or all of which might furnish the necessary motivation for healthful action. Social scientists might find a focus on people obvious, but by explicitly focusing on aspirations, it would also help guide the attention of any technology-minded collaborators.

Additionally, a methodology guided by aspirations reconciles the great conundrum of aid versus agency, of paternalism versus participation, of top-down versus bottom-up development. At the heart of this issue is the difficult fact that communities that need help need help. Try as we might pretend otherwise with the language of “cooperation” and “participation,” those of us coming in with the advantages of wealth, education, and political influence have something that beneficiary communities do not – that is the very premise of our engagement. The question, then, is not whether there is a power differential – there cannot but be – but whose desires ultimately guide the



application of that power. With a needs-based approach, it is easy to sideline the aspirations of beneficiaries for the sake of needs abstracted from the people who have them. It is more difficult – though not impossible – to claim to follow an aspiration-based approach without respecting the long-term desires that people have for themselves.

In any case, aspiration-based approaches remain neglected both as theory and as practice. Most of the literature on aspirations focuses narrowly on career aspirations [5][8]. Arjun Appadurai’s conception of the “capacity to aspire” [1] is salient in development, but it deserves to be further developed and operationalized. In ICT and development, Joyojeet Pal and his colleagues have examined the aspirational symbolism of digital technology [15][16], but not as a framework for causing development. Practitioners, meanwhile, continue to conduct needs assessments and roll out solutions based on user needs.

Overall, an aspiration-focus would tilt development efforts toward programs that help build people’s own ability to achieve their aspirations. Arguably, such an approach makes traditional forms of design less applicable, but that is part of the point. Designed artifacts may serve as tools, but are less likely to cause personal or societal growth on their own. At the same time, much of the methodology of design could be repurposed for aspirations. Techniques for understanding people remain just as relevant, though they may require refocusing. Design practices around brainstorming different options and remaining detached from any one option, can be helpful once an aspiration has been articulated. And, methods of evaluation, both to analyze competing “designs” and to trial with actual people remain applicable. What aspirations ask of designers is to be committed for the longer time spans that social change requires, and to develop and learn a new design vocabulary for social change – one that remains focused on meaningful human change from beginning to end.

## 7 Conclusion

Traditional design works hard to accommodate people, to accept their attitudes, skills, and values as they are. International development, however, typically requires people to learn, grow, and evolve. In this paper, I have argued that this difference is among the deeper causes of the routine failures of ICT for development. A methodology that seeks to avoid changing people is unlikely to succeed at outcomes that require human change.

Design and international development nevertheless have an affinity based in part on their focus on needs. But while needs-focused approaches are appropriate for dire situations such as disaster relief, their tendency toward quick, replicable solutions is less appropriate for the sustained efforts required of international development. To counter this, I propose that development practice shift to a focus on human aspirations, one that move attention from problem-solving to people-nurturing. The persistent, upward nature of aspirations is better suited for building the individual and institutional capacities that are required for long-term, large-scale international development.

## References

1. Appadurai, A. The capacity to aspire. Rao, V., and M. Walton (eds.). *Culture and Public Action*. Orient Blackswan (2004).
2. Cristia, J. P., Ibarra, P., Cueto, S., Santiago, A., Severin, E. Technology and child development: Evidence from the One Laptop per Child program. IDB Working Paper Series, No. IDB-WP-304. Inter-American Development Bank (2012).
3. DeRenzi, B., Findlater, L., Payne, J., Birnbaum, B., Mangilima, J., Parikh, T., Borriello, G., Lesh, N. Improving community health worker performance through automated SMS. In *Proceedings of the Fifth International Conference on Information and Communication Technologies and Development*, pp. 25-34. ACM (2012).
4. Diga, K. Mobile Cell Phones and Poverty Reduction. Diss. Masters Dissertation. Durban, South Africa: School of Development Studies, University of KwaZuluNatal (2007).
5. Haller, A. O., & Miller, I. W. The Occupational Aspiration Scale--Theory, Structure, and Correlates. Report Number AES-TB-268, Michigan State University (1963).
6. Hayek, F. A. *The Road to Serfdom*. Routledge (1944).
7. IDEO. *The Field Guide to Human-Centered Design*. IDEO.org, (2015). <http://www.designkit.org/resources/1>, last accessed 2017/03/24.
8. MacLeod, J. *Ain't No Makin' It: Aspirations and Attainment in a Low-Income Neighborhood*. Westview Press (2009).
9. Medhi, I., Menon, G., & Toyama, K. Challenges in computerized job search for the developing world. In *CHI'08 Extended Abstracts on Human Factors in Computing Systems* (pp. 2079-2094). ACM (2008).
10. Medhi, I., Prasad, A., & Toyama, K. Optimal audio-visual representations for illiterate users of computers. In *Proceedings of the 16th international conference on World Wide Web* (pp. 873-882). ACM (2007).
11. Medhi, I., Sagar, A., & Toyama, K. Text-free user interfaces for illiterate and semi-literate users. In *Proceedings of the International Conference on Information and Communication Technologies and Development. ICTD'06*. pp. 72-82. IEEE (2006).
12. Medhi, I. and K. Toyama. Full-Context Videos for First-Time, Non-Literate PC Users, *IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD2007)*, Doha, Qatar (2007).
13. Norman, D. A. *The Design of Everyday Things*. Basic Books (2002).
14. Oxford English Dictionary. (2013). Second Edition. OED Online version, Dec. 2013. <http://www.oed.com/>, last accessed 2017/03/25.
15. Pal, J., Chandra, P., & Vydiswaran, V. V. Twitter and the Rebranding of Narendra Modi. *Economic & Political Weekly*, 51(8):53 (2016).
16. Pal, J., Lakshmanan, M., & Toyama, K. "My Child will be Respected": Parental perspectives on computers in rural India. In *International Conference on Information and Communication Technologies and Development, 2007 (ICTD 2007)*, pp. 1-9. IEEE (2007).
17. Prahalad, C. K. *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits*. Wharton School Publishing (2004).
18. Selingo, J. J. Demystifying the MOOC. *New York Times* (Oct. 29, 2014).
19. Sen, A. *Development as Freedom*. Oxford University Press (1999).
20. Toyama, K. From needs to aspirations in information technology for development. *Information Technology for Development* (2017).
21. Toyama, K. Geek Heresy: Rescuing Social Change from the Cult of Technology. Public-Affairs (2015).
22. Vickers, A. *A History of Modern Indonesia*. Cambridge University Press (2013).

23. Wikipedia. History of Indonesia. [https://en.wikipedia.org/wiki/History\\_of\\_Indonesia](https://en.wikipedia.org/wiki/History_of_Indonesia), last accessed 2017/03/23.
24. Williamson, J. Democracy and the “Washington consensus”. *World Development*, 21(8):1329-1336 (1993).
25. World Bank. World Bank Open Data. <http://data.worldbank.org/>, last accessed 2017/03/23.