

Welfare, Agency and “ICT for Development”

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Abstract—This paper deconstructs the term “development” in “ICT for Development” – does it imply welfare or agency? Using a framework of individual capability expansion and social choice theory, we illustrate how these two approaches may conflict, and present a simple model to explore how sometimes the Provider's intention in providing an ICT artifact and the User's ultimate usage differ. We analyze our case studies of *Our Voices* and *Hole in the Office* against this and find that the User is likely to gain a tangible, immediate return on using agency-enhancing applications (particularly involving entertainment content), while the impact of welfare-enhancing applications is harder to achieve, given the complex contextual determinants of converting information on “potential” welfare outcomes to “actual” welfare gains. We recommend further research on the welfare-agency tension, and on assessing paternalism in “ICT for development” interventions.

Index Terms—capability, “ICT for development”, social choice, telecentres

I. INTRODUCTION

Imagine the following scenario. An NGO (possibly funded by IDRC¹/the World Bank/DfID²) interested in empowering rural communities through multipurpose telecentres visits a village in a developing country and forms a working relationship with the local NGO. A telecentre will be implemented (to “bridge the digital divide”), and a participatory rural appraisal (PRA) conducted (to ensure “participative development”) in which the village residents are asked about what they would use the telecentre for. As the residents are uncertain of the benefits, the visiting team briefs them on how information on crop production *could* help them increase yield, how IT skills will be taught to their children, using which they *could* gain jobs in the nearest town, how women *could* gain information on nutrition during pregnancy. The audience is dubious, but agree to the telecentre as it sounds like it is going to go ahead anyway (and after all the benefits

sound attractive)³. Once the centre is established, however, most usage is around entertainment applications. The young men (rarely women) who come to “learn computers” find the games more fun than the IT lessons. The more technically comfortable users introduce YouTube to others. Women do participate in the community radio, which is integrated with the telecentre, but after a while it is the same people being recorded and the same didactic information being played. Usage diminishes. The NGO complains that “people don't know what's good for them” and the donor withdraws. Private sector providers either do not see any profit, or carefully research their demographic and use the IT equipment for a digital photography studio.

This may seem like an extreme hypothetical situation. However, in 2000-2002, the World Bank was estimated to have funded between \$1 and \$2 billion on “Information and Communication Technologies for development” (ICTD) projects, while InfoDev (the Information for Development programme hosted by the World Bank) had a budget of \$10 to \$15 million per year [2]. The “Declaration of Principles” agreed upon at The World Summit on the Information Society in 2003 defined an “information society...[as one] where everyone can create, access, utilize, and share information and knowledge, enabling individuals, communities and people to achieve their full potential in promoting their sustainable development and improving their quality of life” [3]. Much of the focus was on rural telecentres, the last mile of connectivity. It was felt that access to information (be it health, agriculture, education or government schemes) would at some level lead to individuals being able to act on that information and empower themselves [4, 5]. Positive expectations of telecentres were portrayed by many [6, 7, 8, 9, 10]. Heeks [11] conceptualized the link between information and empowerment as depicted in Fig 1.

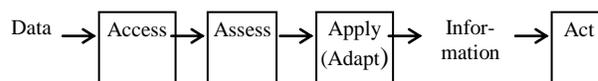


Fig 1: The Information Chain

Source: [11: 7]

¹ Canada's International Development Research Centre

² UK's Department for International Development

³ See [1] for a recognition of overemphasizing the benefits of telecentres in a PRA.

II. "DEVELOPMENT"

Yet, research on telecentres increasingly illustrates discrepancy between "development" intentions and usage. Kuriyan et al [12] discover that the Akshaya centres in Kerala struggle to be both financially and socially sustainable. Kannabiran et al's [13] longitudinal examination of the RASI 'Chiraag' kiosks in rural South India finds that 35 of 60 kiosks in their sample (58%) closed down or were non-functional over a two-year period, while the remainder were mostly used for offline purposes (DTP, digital photography, etc.). Kumar and Best [14] state that in 2004, a year after initial research, 29 out of 35 kiosks in a Tamil Nadu-based telecentre project had closed. Sharma and Rao [15] find that in a vicious circle, telecentre-based agricultural information is not updated regularly by service providers, kiosk owners do not place great emphasis on it as it is not profitable, and farmers in turn do not trust it. Kiri and Menon [16: 16] conclude that "in terms of rural ICT bridging the digital divide, most services provided by rural kiosks today do not address the needs of the illiterate mother-to-be or the retired government clerk, trying to find out why he has not received his monthly pension amount". Instead, many telecentres (where there is enough of a catchment) are used for entertainment, photocopying, data entry, desktop publishing, digital photography and printing [16, 17].

In our hypothetical scenario and in the above examples, providers and users have different expectations around ICTD interventions. Since "development" as a goal comprises both welfare ("concerning a person's overall good") and agency ("concerning the ability to participate in deciding matters that bear on that good"⁴), we ask how, and by whom, is the "development" in "ICT for Development" defined? And once defined, how is this "development" achieved? We begin with a summary of the contradictions in "development" in Section II. We then theorize these contradictions in Section III using the capability approach to highlight the agency and welfare components of development. We then show how the agency-welfare debate gets even more complicated when it involves more than one individual. If establishing and using a telecentre is a collective choice between providers and users, then how is one social choice (for the "common good") reached, rather than another? In order to illustrate our argument, we introduce a simple game theoretic model to analyze our cases of *Our Voices* (which we define as paternalistic and welfare-focused) and *Hole in the Office* (non-paternalistic) against this. We ask – *do donor-supported, welfare-focused "ICT for development" projects often contradict the "agency" element of development? And if yes, how are we to understand and respond to this collective choice difficulty?* This paper is in response to criticism that the term "development" in "ICT for development" needs to be deconstructed [20, 21]. Our aim is to understand, theorize and learn from the discrepancies that often arise between intentions and usage in ICTD projects.

"Development" is a nebulous concept, to say the least. The origins of international "development" as a discipline are often attributed to Harry Truman's speech in 1949 [22, 23, 24]. In his speech, Truman claimed "we must embark on a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas." [22: 6]. However, the prevalent modernization approach to development in the 1950s and 1960s was questioned in the late 1960s and 70s by dependency theorists such as [25, 26] who argued that it was precisely the concept of technological underdevelopment that was making "peripheral" countries dependent on the "core". In parallel, development began to be seen as not only economic, but also social (Esteva quotes the UN equating this to the difference between "growth" and "change" [22]). As a result, the Human Development Index (HDI) was devised by the United Nations Development Programme (UNDP) in the late 1980s, which uses indicators of life expectancy, adult literacy and educational enrolment as well as GDP, to measure "positive change".

The 1990s saw the rise of "post-development" when "development" was criticised as a biological concept that could not be translated to the social sciences, as it implied a process of linear improvement of an organism until it reaches its complete form [22, 23]. Post-developmentalists [22, 23, 27, 28] argued that development was something "being done" to people rather than involving them. Hancock [23] called the industry "Development Inc.". Rahnama [29] even questioned the idea of empowerment: "when A considers it essential for B to be empowered, A assumes not only that B has no power – or does not have the right kind of power – but also that A has the secret formula of a power to which B has to be initiated" [29: 123]. It was felt that this kind of judgment (whether well-intentioned or not) undermined a person's agency.

Even within "people-sensitive" methodologies such as Participatory Rural Appraisals [30, 31, 32], it was felt that instead of "outsiders learning what insiders wanted" (Chambers's aim), insiders learnt what outsiders wanted [33, 34, 35]. Helena Norberg-Hodge [36] gives an example from her ethnographic research in Ladakh, India. When she first visited in 1975, the notion of poverty hardly existed and when she asked where the poorest houses were she was told ("proudly") that there were none. Returning many years later, she overheard the same person asking an American tourist, "if only you could do something for us; we are so poor". This therefore, returns us full circle to the question- what is the development in ICTD? Is it primarily welfare improvement? Or is it enhancing agency (the ability of people to act for themselves)? With these questions, we turn to Amartya Sen and the capability approach.

⁴ [18] as summarized in [19].

III. THEORETICAL FRAMEWORK

A Individual capability expansion

The premise of Amartya Sen’s approach to socio-economic development [37, 38, 39] is to view deprivation not in terms of a lack of specific “endowments”, but in terms of the “unfreedom” to achieve certain “entitlements” [40]. He goes beyond the restrictive definition of income-based metrics in saying that improving each individual’s capability to live a better life must be viewed as both the means and the end of development, and is best achieved through complementary State and market activity [40]. As an end, improving capabilities involves an expansion in the functionings of an individual (both their beings and doings), i.e. **welfare**, which could go all the way from the fulfillment of elementary capabilities such as survival, to the fulfillment of complex capabilities such as being secure. As a means, improving capabilities involves ensuring the person has the freedom of opportunity (to pursue the option of their choice), as well as the freedom of process (to make his/her own choice on what s/he values) i.e. **agency**. Fig 2 below illustrates the interactions that constitute Sen’s approach.

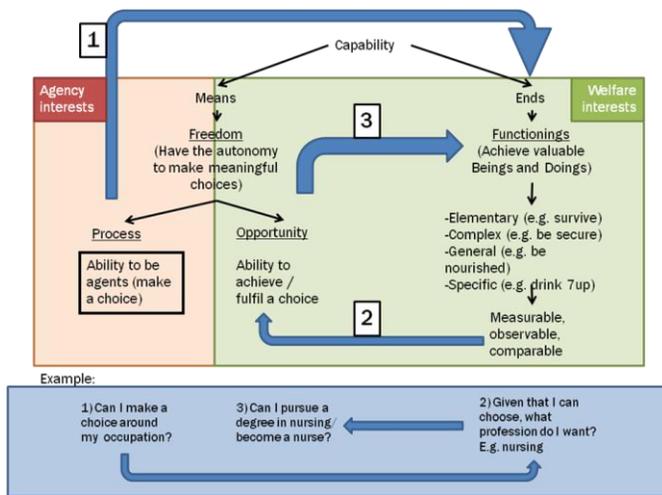


Fig 2: Development as capability enhancement

Source: Authors’ own based on [41]

The capability approach presents us with a fairly broad and comprehensive definition of overall human development, in which individuals are seen as the central agents of positive change (as opposed to the State, firm, or household). Sen [39: 512] argues that “the real challenge ... is to imbue [all] individuals with freedoms of the type that will allow them to pursue that which they have cause to value”. While this sounds theoretically simple, its implications for policy are complex. An insistence on agency implies that “revelation of preferences is not enough; we have to understand the social structural constraints on the decision-maker...” [40: 220]

Moreover, as any look at democratic politics reveals, collectives of “free and empowered agents” undergo grave difficulties in reconciling that “which they individually have cause to value.”

B Social choice

One of the criticisms of Sen’s capability approach is that it focuses on the individual rather than on groups [42, 43]. While pursuit of certain capabilities is entirely dependent on the freedom and actions of the individual, others are dependent on collective choices, particularly in public policy. Since “being informed” as a capability in the ICTD context involves collective choices around accessing information, often as a shared public good, it is important to examine how the social choice to pursue such capabilities is made.

Kenneth Arrow’s famous impossibility theorem in the 1950s proved that in the absence of interpersonal comparisons of utility⁵, an aggregation of individual preferences to form social preferences could never be consistent, even when held to minimally restrictive assumptions such as non-dictatorship and Pareto optimality⁶. Only a dictatorship would avoid inconsistencies, but this would mean “an extreme sacrifice of participatory decisions [in politics]... and a gross inability to be sensitive to the heterogeneous interests of a diverse population [in welfare economics]” [38].

In response, Sen’s work in social choice has argued that a complete rejection of interpersonal comparisons is both limiting and unrealistic. It leaves us with too little information on the basis of which the collective choice must be made (i.e. if we had to cast our vote only on the basis of whether the act improved the greater good or not). As voters, we often incorporate information on the distributional consequences of a collective choice into our decision-making process, and this amounts to an approach of “informational broadening” in which we are concerned not just with the act of voting and the impact of the choice in the aggregate, but also with the distributional implications of our choice, i.e. having “public decisions... be sensitive to inequalities in well-being and opportunities” [38: 354].

Sen attempts to operationalize his formulation of social choice theory by linking it back to the capability approach. He maintains that through informational broadening and partial interpersonal comparability, the identification of those “substantive freedoms” that ensure the improvement of key capabilities for all human beings can be arrived at. Sen argues, “in dealing with extreme poverty in developing economies, we

⁵ The rejection of inter-personal comparisons of utility in welfare economics and social choice followed criticisms of utilitarianism by logical positivists such as Robbins on the basis that mental states (including notions such as happiness and utility) are neither accurately measurable nor comparable across individuals. [38]

⁶ “A situation, a state of affairs, or an economy is Pareto optimal if there is no alternative available that makes some people better off and no one worse off.” [44: 3]

may be able to go a fairly long distance in terms of a relatively small number of centrally important functionalities (and the corresponding basic capabilities, e.g. the ability to be well-nourished and well-sheltered, the capability of escaping avoidable morbidity and premature mortality, and so forth)” [45: 44-45].

Clearly, the examples Sen cites are hard to argue with (health, security, etc.), and can be expected to command a consistent and universal social preference towards their improvement. However, there are other capabilities that fall in the grey area of being more or less prone to reflecting a consistent social choice, in which the heterogeneity of preferences may overshadow any moral pressure towards consensual action. These “second-tier functionalities” have come to occupy the status of important capabilities through some *a priori* formulation on the part of a select few (mostly donors), an approach that Sen rejects as a valid way of determining collective priorities. As [46: 5, emphasis added] rightly points out, “[this] challenge posed by the valuational element of the Capability Approach requires further discussion of *procedures for evaluating capability sets* that could reflect the agency aspect, as argued by Sen”.

IV. ANALYTICAL MODEL

We now return to the two critical questions raised in the Introduction: (1) how do “ICT for development” projects enhance the capabilities of users? and (2) how does the implementation of an ICTD project come to be a consistent social choice between providers and users? To illustrate the tensions between welfare and agency inherent in the responses to these questions, we return to the hypothetical example in the Introduction and stylize it in the form of a simple two-person two-stage sequential bargaining game between a symbolic ‘User’ and ‘Provider’⁷, under a set of reasonable assumptions.

We construct this as a game of complete and perfect information, in which both players’ payoff functions are common knowledge, and at each move, both players are fully informed of all moves until that point in the game [47: 55]. As in all games, each player is looking to maximize own payoff among alternatives. However, the *a priori* optimal development outcome of the game (using the capability approach) **is one that maximizes the payoff of the User** (the “digitally excluded” player).

There are two distinct stages to this sequential game, with each player choosing one action in each stage. The game is initiated by the decision of the User (via a participatory planning exercise) to Demand [D] or Not-Demand [ND] the provision of the shared ICT artifact. The Provider responds by choosing to Provide [P] or Not-Provide [NP] the ICT artifact. In Stage 2, the User makes a decision to use the ICT artifact for a strictly Welfare-related [W] (e.g. job search) application or a strictly Entertainment-related [E] (e.g. gaming) application at a

given point in time. The Provider responds by choosing to Allow [A] the User to use the ICT artifact for his/her chosen application, or to Restrict [R] that type of usage.

We look for the equilibrium outcome of this game using backwards induction, such that in every sub-game we find each player’s predicted “best response” strategy to the other player’s moves which makes the prediction strategically stable or self-enforcing. This leads us to the Sub-game Perfect Nash Equilibrium (SPNE) outcome of the game in which no single player has an incentive to deviate from their predicted strategy.

Stage 1

Initially, as long as the User expects to gain some positive utility x_u from interacting with the described ICT artifact, she will choose D over ND. In response, as long as the Provider also gains some positive utility x_p from the User gaining access to the ICT artifact, she will choose P over NP. It is reasonable to assume that the User would suffer a disutility $-(x_u)$ when she plays D and the Provider responds with NP, and that the Provider would suffer a disutility $-(x_p)$ if she plays P when the User has played ND. A first-stage SPNE outcome of the game is therefore the User playing D and the Provider playing P/D⁸, as long as the *prospect* of the User interacting with the ICT artifact delivers positive utility $((x_u, x_p) > 0)$ to each player.

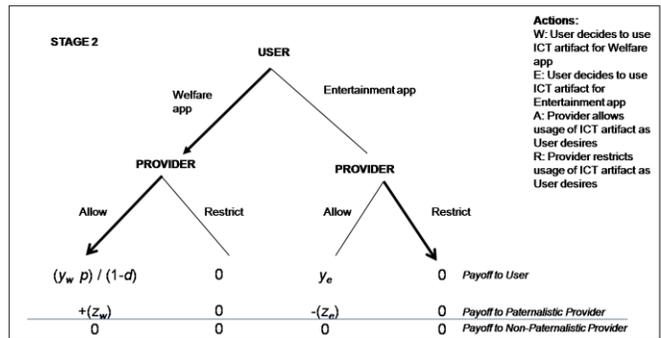
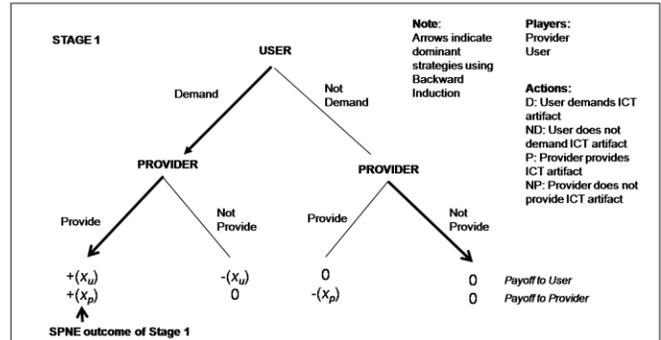


Fig 3(a) and (b): Extensive form representation of a two-stage sequential bargaining game between an ICTD Provider and User

⁷ For more on analysis of multi-person decision problems through game theoretic models, see [45: 57-61].

⁸ Read as ‘Provider playing P given User played D’

Stage 2

We now turn to the actual usage of the ICT artifact. Treating the ICT artifact as a multi-purpose device/set of devices with a range of possible applications, the User could play W or E at a given point in time. An E usage delivers (y_e) positive utility in the present (e.g. watching a film, listening to music, playing a game, etc.), while a W usage delivers (y_w) positive utility in the future, subject to the translation of the welfare information to a welfare action/outcome (e.g. job search information leading to the User getting a new job; health information leading to a quicker remedy or lower disease incidence; crop practice information leading to higher crop yields). The final utility from a W usage to the User in stage 2 therefore is:

$$((y_w p) / (1 + d)),$$

where ' y_w ' is the ultimate welfare gain from the outcome informed by the ICT artifact's usage, ' p ' is the probability of converting the welfare information accessed through the ICT artifact to a welfare action/outcome, and ' d ' is the User's discount rate for the future.

In this stage, we distinguish between two types of Providers: a Paternalistic provider and a Non-Paternalistic provider. What is common is that both types of Providers get the baseline positive utility in Stage 1 (x_p) from the User gaining access to the ICT artifact.

(1) With a Paternalistic Provider

A Paternalistic provider gains positive utility (z_w) when the ICT artifact is used by the User for a strictly Welfare-related application, and accrues negative utility (or disutility) ($-z_e$) when the ICT artifact is used by the User strictly for an Entertainment-related application.

We see that if the User plays W, the Paternalistic Provider's dominant strategy is to Allow usage, delivering a total payoff from both stages of $[z_w + x_p]$ or $[z_w - x_p]$. If the User plays E, then the Paternalistic Provider's dominant strategy is to Restrict usage, delivering a payoff of $[x_p]$ or $-[x_p]$. Given that the User knows that if she plays W, the Paternalistic Provider will play Allow, and if she plays E, the Paternalistic Provider will play Restrict, her dominant strategy is to play W delivering a total payoff from both stages of:

$$[((y_w p) / (1 + d)) + x_u].$$

The SPNE of Stage 2 is therefore the User playing W, with the Paternalistic Provider playing A. However, returning to our *a priori* definition of the optimal equilibrium of the game being the outcome that maximizes the utility of the User, **the SPNE will be the optimal development equilibrium outcome if and only if**

$$((y_w p) / (1 + d)) > y_e$$

As can be seen, this alignment between outcomes depends critically on the baseline values of y_w , y_e , p and d for a given User in a given environment. **This potential misalignment between the SPNE and the optimal development outcome allows for instability and inconsistency in the collective choice of these two players, conditional on the input parameters.**

(2) With a Non-Paternalistic Provider

A Non-Paternalistic provider neither gains nor loses utility from the content of the ICT artifact's usage. Given this, among the alternatives within each sub-game in the second stage, the Provider faces no clear Dominant strategy. The Provider's payoffs are indifferent to the choice of the User, and are only conditional on the valuation of the first stage outcomes (x_p).

The choice of the game's SPNE outcome now rests entirely on the User's choice of strategy. Irrespective of whether she plays W or E, the Provider is indifferent between playing Allow or Restrict. So in order to maximize her own utility, the User will play W if:

$$((y_w p) / (1 + d)) > y_e$$

And play E if:

$$((y_w p) / (1 + d)) < y_e$$

This will result in the SPNE outcome of the game being Welfare or Entertainment based on the User's higher utility, with the Non-Paternalistic Provider playing Allow in return. As is obvious, this is the optimal development outcome of the game, since it maximizes returns to the User. **This alignment between the SPNE and the optimal development outcome ensures stability of outcomes and consistency in the collective choice, irrespective of the input parameters.**

In summary, the model provides four key insights:

- 1) ICTD projects involve collective choices between Providers and Users with varying conceptions on desired capabilities, which sometimes leads to divergent not convergent social choices around the use of the ICT artifact for "development".
- 2) Suboptimal development outcomes may manifest in ICTD projects when a paternalistic provider overrides the agency capability of a User in a context where $((y_w p) / (1 + d)) < y_e$, by mandating that the User should use the ICT artifact for strictly welfare-related applications (when there is no consistent social choice).
- 3) Suboptimal development outcomes may also manifest in a non-paternalistic ICTD project, where the User chooses to use the ICT artifact for strictly entertainment-related applications (given that $((y_w p) / (1 + d)) < y_e$), thereby expanding her agency capabilities, though without affecting her welfare

capabilities (again, when there is no consistent social choice).

- 4) The achievement of a stable social choice between a User and a non-paternalistic Provider that expands the User's agency and welfare capabilities is contingent on a social, structural and behavioural context where the values of y_w , p , d and y_e organically allow for $((y_w p) / (1 + d)) > y_e$.

V. CASE STUDIES

We now introduce our case studies of *Our Voices* - a rural, donor-funded telecentre and community radio in a South Indian state - and the *Hole in the Office* (henceforth *HiO*) in the capital of that state. Ethnographic methods were used in both cases - six months (August 2006-January 2007 inclusive) were spent at *Our Voices*, where over 200 people were interviewed and observed and major festivals and events attended in the village. The *HiO* research is ongoing, but we present a month's data usage here.

A *Our Voices*

Our Voices is a community radio and telecentre (in this case, a room with four computers, a printer and initially, a photocopier). It is part of the Arivu Resource Centre in the village of Bhairavi (population 3000). The UNESCO-funded initiative was started in 2002 to examine if and how ICTs could help reduce poverty and contribute to development [48, 49]. Donor funding ended in 2004 and *Our Voices* became a joint initiative between Jaan (a rural development NGO working in the area) and Maatu (an NGO focusing on information for empowerment). The centre has several aims - to provide IT training, to disseminate "relevant information" (as defined by Maatu), to empower the community through access to information, and to illustrate that village communities are capable of creating their own media content. The initial participatory rural appraisal found "the community wanted locally relevant information on crops, market prices, and health (particularly women's health)" [49]. Programme information was contextual, because "the villages of India are reduced to being hapless consumers of media that is irrelevant to them". The community radio topics included the medicinal value of local plants; road governance; sanitation and women's health. The project implementers state that "by providing information about employment, better farming techniques and health, we hoped for new sustainable job opportunities, improved farming knowledge and healthier life." [49]

Research gradually revealed discrepancies between the portrayal of *Our Voices* (in development case studies, conference proceedings, and so on) as a successful telecentre and the "reality". We were told by villagers that the radio set medium had been phased out soon after implementation (one of the reasons given was that the villagers started taking the radios out to their fields and listened to FM radio instead of

Our Voices). During research, some listeners dismantled one of the radio loudspeakers in protest and used it to accompany the procession of the statue for a religious festival. The NGO's reaction to this was that the people were ignorant and uninterested in their own "development". They removed all the cabling, and set up the loudspeaker in another village. The village cable TV operator had been taken over by the town cable operator who could not carry the community radio channel because of technical difficulties (he also expressed doubts about profitability). The village now receives 80 cable TV channels. Despite the early encouragement given to girls to come for the IT classes, it is young college-going boys who attend and mostly play games. At the same time, some parents (predominantly daily wage labourers earning Rs 30-50 (~\$1) per day) pay up to \$30 for a three-month course of basic IT lessons, hoping it would lead to a reliable job (rather than agriculture) for their children.

B *The 'Hole in the Office'*⁹

Using the debate around the well-known *Hole-in the Wall* experiment for children [52, 53] as a starting point, the first author was involved in a research project that investigated to what extent the premise that "unfettered access to a PC in a public space allowed for a certain basic level of computer literacy and the corresponding access to information, knowledge and opportunities that that entailed," [50] held true for adults from low-income backgrounds. The exploration was meant to simultaneously investigate how PC access was perceived and utilized by non-information workers, while also understand the necessary conditions under which access to and use of ICT artifacts may translate to changes in behavior and welfare gains.

The project was initiated with a baseline survey of the service staff at an urban software facility. Participants were workers in housekeeping, security, driving, and maintenance, all earning between \$60 and \$150 each month. While their baseline technological exposure varied (a quarter of the staff had never touched a PC before), their expressed valuation of the PC was uniformly high, with 28 of 30 respondents rating the PC as "Important" or "Very Important" to get ahead in life [51]. All 30 regarded the PC as being critical for the success of their children. This high valuation stemmed from notions that a PC enables "1 person to do the work of 10 or 100 people." The desire to learn to use the PC was therefore high, with those workers <25 years old being particularly interested in acquiring this skill, inspired by their belief that "with a computer, you can get a better job (even within this office)" [51].

A dedicated internet-connected PC was then placed in a publicly-accessible location within the facility's compound for the exclusive use of the office's service staff. All the service staff were briefed about the availability of this PC for their use after completion of their regular work, and fully informed that

⁹ Summarized from [50] and [51]

all activities on and around the PC were being recorded. No other restrictions or directions were given.

Data collected over a month's usage of the *HiO* revealed several insights [50]. Usage steadily increased over time, from 6.4 hours in the first week to 14.4 hours in the fifth week. The dominant application used was Internet Explorer, with offline games and Windows Media Player following as the next most popular uses of the PC, particularly among complete novices (Fig 4). The most common use of the internet was for online entertainment and games (25% vs. 1% for job search - Fig 5). There was ample evidence for group/peer learning dynamics, with the more competent leading novices through basic usage. There was, however, no evidence for any measurable improvement in welfare-related outcomes (e.g. finding out about and moving to a better paid job) since the introduction of the *HiO* PC. Yet, across the board the perception was that the PC was a "good" thing and that free access should not be discontinued.

VI. DISCUSSION

A Divergent social choices between Provider and User around the use of the ICT artifact

According to Sen, development is constituted by a person's freedom and "achievements...judged in terms of her own values and objectives" [37: 19]. Our argument is that ICTD projects often champion "welfare-based" initiatives to the extent of undermining the agency of the local population.

There is a long history of the tension between paternalistic welfare-related pressure and entertainment usage in ICTD projects (see, for example, the Kothmale and Radio Sutatenza examples among others in [54]). Even though entertainment is popular in community radio, it is often discouraged by the implementers. A community radio manual cautions "with the exposure to the saucy entertainment through other channels the listeners of community radio are likely to demand cheap commercial entertainment. You may broadcast this, justifying that it is asked for by the people. But it is like a blind alley. Once you enter it, it is almost impossible to return. Once you spoil the taste of the listeners, community radio tends to be equated with a tape recorder which can play, day in and day out, the songs of personal choice" [55: 46]. Similarly, Mitchell and Baxter [56] compare FM radio to fast food and state that community radio is organic and therefore nutritious.

However, the didactic nature of community radio can be frustrating for listeners. In *Our Voices*, Jaan (the rural development NGO) echoed [56] in stating that community radio was "good for them", and given that "people don't know what's good for them, you have to force information down their throats, then they will appreciate it" - a judgment which supports Rahnema's earlier critique [29] that the NGO assumes it has a secret formula, which the villagers do not have. The Maatu project manager equally comments:

The thing is, the [local language] channels, which are based out of [the state capital], they're all entertainment-based, and they're all copying the STAR network... soap operas, religious kind of episodic programmes, long drawn out like villagers like, sensational crime reporting, news, but not really locally relevant, but entertaining all the same. And they play a lot of movies, so what happens on the field is, the guys, it's largely an agrarian community, the farmer, comes back from the field at 7pm when it's dark, switches on the TV, sees a movie's just starting, obviously just wants to relax and see the movie. At the same time, we might be giving a programme about an agricultural scheme, which the government might have for him, which might significantly increase his yield, but he's not interested in listening to it, because it's boring. You know, he wants to watch the movie. That's the competition we've got, the challenge we have to overcome. [Interview with Ramesh, Project Manager, August 2006].

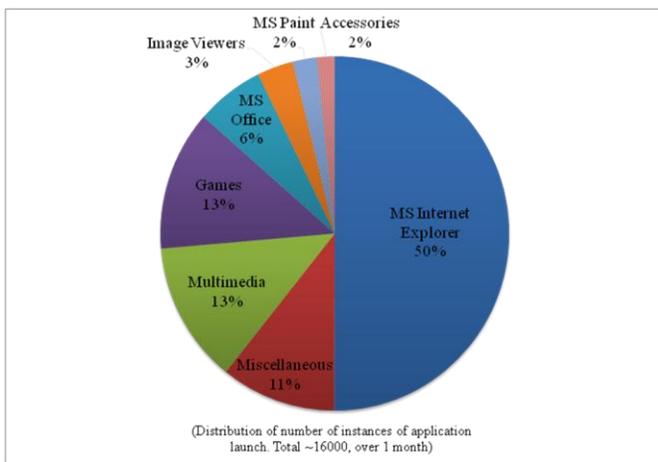


Fig 4: Usage of *HiO* PC
Source: [50]

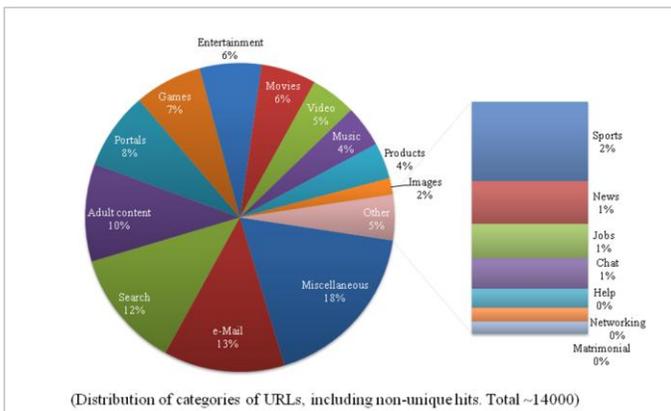


Fig 5: Breakdown of Internet usage of *HiO* PC
Source: [50]

Ramesh has therefore made a contradictory statement here - that it is the STAR-type entertainment that appeals to local users, but that it is not "locally relevant".

These sentiments remind us of earlier mentioned post-developmentalists and Sen's definition of development as something that is defined by oneself. In this case, shouldn't the donor, Maatu and Jaan in *Our Voices* respect "what the community wants" even if it is to "play music all day"? How does one know what is good for someone else? The farmer in the quote may have made a choice to watch a movie rather than listen to the community radio, or if he listens to the radio, he prefers songs rather than listening to how to clean up the roads. Both actions illustrate his agency.

The picture is further complicated when we move away from our model towards circumstances filled with information asymmetries. The Provider in *Our Voices* assumes "bounded rationality" on behalf of the User - i.e. that the Providers know something that their audience does not. But what about the bounded rationality of the Provider? In Bhairavi village, many saw little value in the IT classes as it was hard to get jobs because of the stigma that they were "village folk", and complained that the radio constantly broadcast the same "boring" information. They would have preferred a factory (textiles, cement, or to process the fruit from the tamarind trees around the village) with tangible income opportunities. In the Users' mind, the realized gain from a non-ICT artifact-related welfare intervention seems to trump the value of $(y_w - p) / (1+d)$, where either y_w (the absolute welfare gain informed by the use of the ICT artifact) is low, or 'p' (the probability of converting that information into a welfare outcome) is low. This reminds us of Leonard's [57: 266] ironic account of his development mission in Pakistan "we are looking for valleys to develop... none of us knows Pakistan, but we all know what is good for it." And herein lies our questioning of "welfare-focused" ICT for development projects - are achievements judged in terms of a community's own values? As Zheng [58] states, capability in ICTD is often seen as the capability to use ICTs. However, according to Sen, capability regarding the use of ICTs would be to have the freedom to choose to have ICTs or not and if so, what to use them for.

The *HiO* case in contrast, allows the User's preferences to find unquestioned expression. As one of the users commented, the main difference in his life since starting to use the *HiO* PC was that "listening to music makes me feel good - so I leave the office feeling happy".

B Paternalistic ICTD provision as a response to divergent social choices between Provider and User

The contradiction between individual capability and collective choice highlighted by [42, 43] is particularly exacerbated in the case of information access, which is a public good. While there are certainly divergent choices between using the ICT artifact for Entertainment or Welfare among

Users, i.e. there are those in the *HiO* case who are interested in job hunting, and those parents willing to save up their earnings for a \$30 IT course at *Our Voices*, the collective choice conflict that is our fundamental concern in this study is when **the Provider's choice of appropriate ICT usage differs from that of the User**. The negotiation between the two players in such scenarios often results in the User's agency being relegated to the background, and the Provider's conceptions dictating project implementation (given that they control access to the device). In *Our Voices*, the project's manager commented that:

First few months, took a lot of energy and effort co-ordinating the project. These guys, you have to keep telling them that programming should be in a certain direction. Because it's really development, development, development. We can either approach community radio as what the community wants. If you make it that way, it will be music only. But at [the donor agency] we can't justify all this equipment to play music all day. There has to be a development angle. So you kind of need to keep pushing programming in a certain direction. [Interview with Ramesh in December 2004]

Here, the assumption is that "these guys" do not know what is good for them (like the donor and NGOs do), reflecting a clear positive valuation by the Provider of some applications ($+z_w$) and a clear disutility to the Provider from other kinds of usage ($-z_e$). Given a choice, Users are expected to use the ICT artifact to play music all day (choosing an Entertainment application over a Welfare application), clearly amounting to inappropriate usage in the Provider's opinion. Ramesh states that:

Initially at least it was like that, they [the community] would only ask for songs from the loudspeakers, and then we said, see, don't you want to know if the government is going to help you clean up your roads? And some of them said yes, and some of them said no, no first you play the song. And then we started dictating things a bit. We said, you come and participate in programmes like road governance and all, and then we'll play songs ... So now, it's a little better. They don't request only songs [Interview with Ramesh in August 2006].

Ramesh's final comment illustrates the community's agency to request songs, which is negotiated to take a backseat in favour of their participation in programmes on road governance, determined to be "good" by *Our Voices*.

Therefore, perhaps it is not unusual that beneficiaries of welfare-focused development see it as "something being done to them" [23, 36] - after all "empowerment" ruffles too many feathers, a tangible gain is difficult to see and perhaps better provided by handouts from governments and development agencies (one interviewee in *Our Voices* complained "the

earlier Jaan manager was like a *sadhu* [holy man], giving things away” while the focus is now on information "which is good for us" but not apparently clear why). As a result, residents’ responses to *Our Voices* echo [34] as they say what the outsiders want to hear:

“It is hard to know if people are really listening. In a survey, if we ...ask them whether they watch TV or listen to us, they say yes. Instead we have to ask, what did you think of the programme last week? The minute they see us, they tell us what we want to hear. They say yes, yes, we listened. They feel guilty, for choosing entertainment over development, like something which is good for them.” [Interview with Ramesh in August 2006].

Here, “insiders” have learnt what “outsiders” want as mentioned by [33, 34, 35 and 36]. In this, we see the outcomes converging on the Welfare usage of the ICT artifact, though Users’ preferences seem to indicate a situation where $((y_w p) / (1+d)) < y_e$.

The same dichotomy is absent in the *HiO* given the non-interference from the Provider. Agency remains at the heart of the intervention, with the users being allowed to determine outcomes through the maximization of their own utility function at each point, however they define it.

C Achieving a stable social choice between a User and a Non-Paternalistic Provider

Our model points to those key “social, structural” variables that jointly determine whether an ICT artifact is used for a Welfare rather than an Entertainment application by a particular User, when served by a non-Paternalistic Provider. These include the probability (p) with which knowledge accessed at the telecentre is converted to an action that results in a welfare improvement (higher income or better health), the way the User values the present versus the future (captured by the discount rate d), the absolute value of the welfare improvement related to the acquisition of information using the ICT artifact, if realized (y_w), and the absolute value of utility derived from using the ICT artifact for entertainment (y_e).

Several researchers have emphasized the importance of context and yet, the ICTD projects that incorporate context in useful and meaningful ways into project design are so few. For example, a female community radio producer in Mexico comments "I tell the ladies over the microphone to boil the water, but I know they're not going to do it, because they have no fuel, they have no wood" [59: 68]. We capture this discrepancy in the variable p , which reflects the User’s evaluation of the usefulness of particular knowledge and its translation to a “real” outcome that influences some other basic capability (earnings, health, literacy, security, etc.). In an environment where healthcare centres almost always lack good doctors and medication, what is the use of identifying that one’s baby has dysentery using a healthcare information

system? In an environment where there are limited opportunities for those with a Bachelor’s degree in Arts from a rural government college, what is the use of listing oneself in an online job search application? The analogies to other “welfare” ICTD applications are apparent. There are severe constraints in the translation of information into desired welfare outcomes in most developing country contexts today, given poor infrastructure, dismal public service provision, weak governance and rigid labour markets. Hence the response to *Our Voices*:

“I do not have time to participate in Our Voices. I have five children at home. I sell the vegetables from our land, and make bidis (cigarettes). I hide the wages from my husband otherwise; he would drink it all away. How would I find the time to go there? And they don’t even pay” [Interview with female self-help group member in November 2006].

Another interviewee revealed the (lack of) value of the knowledge disseminated by *Our Voices*:

“Jaan [the rural development NGO] is no good anymore. They used to help us, give us seeds, they helped build community meeting places for the self-help groups... some people came from abroad. But now it is all about information and knowledge. They tell us to keep our streets clean. We keep our streets clean... but what about the government? They don't help us, and it is their job.”

Another reason for a low value of p in welfare improvement and y_w (the absolute value of the welfare improvement) is that even if the community does become "empowered" through “information access”, this becomes threatening to the status quo. In 1995, Radio Huayacocotla in Mexico was accused of transmitting "coded messages" in support of the Zapatistas in Chiapas and temporarily suspended although the messages were community messages in indigenous languages [54]. At the MSSRF village knowledge centres, the project manager Balaji notes that local bureaucrats (such as agricultural intermediaries) are reluctant to give up their monopoly on information, which could be used as a source of power to extract bribes [54]. In *Our Voices*, Bhairavi residents asked where public funds went when a local governance (panchayat) meeting was broadcast, and subsequently the panchayat refused to have further relations with *Our Voices*.

Equally, the values of y_w and y_e (the maximum utilities drawn from strictly welfare-related and strictly entertainment-related applications respectively in our examples, if fully realized) are not absolute, objectively quantifiable measures, but are themselves conditional on the User as well as the environment. In the *HiO* case, there was little doubt in the minds of the women support staff that they could use the PC to learn English, which had a high probability of helping them get a better position even within the same occupational group (the

women also take up domestic housekeeping as secondary jobs, for which this skill would be a great asset). However, this did not translate into any of them experimenting with English language lessons online, since they were at the same time intimidated by the fact that their learning would have to occur in a public space, where they would be vulnerable to being “made fun of” by the male staff as and when they made any errors.

And finally, an explanation of the discount rate ‘ d ’ in our model. A long-standing quandary that has recently drawn attention in development economics is the issue of understanding the consumption choices of poor households, especially time-inconsistent preferences. Banerjee and Duflo [60] describe how despite an average of 30% slack in annual budget for greater food purchase or saving, poor households still face periods of hunger during the year. They present the hypothesis that the poor have very high discount rates for consumption such that future consumption is valued very low compared to present consumption. Hence the prevalence of spending on commodities that deliver instant gratification continues (television, tobacco, alcohol), even when the fulfillment of what are considered “basic needs” remains volatile.

With respect to the *HiO*, this hypothesis presents a convincing lens with which to view the observed patterns of usage with a Non-Paternalistic Provider. Respondents were able to list numerous abstract uses of the PC in the baseline interview and how many of those were life-changing. However, their own unfettered use of the PC ended up being in a very narrow band of applications, dominated by those that were entertainment-related (music, film, games). Some part of this dichotomy is clearly attributable to PC literacy, i.e. the Users being unaware of how certain categories of non-entertainment-related information might be sought using the PC and applied in their lives. Yet, within the context of their collective knowledge, the average minute was spent viewing a YouTube clip, rather than on an online English tutorial. At some level, Users are making the trade-off between the “happiness” or “loss of worries” from the use of the PC to view film clips and play music in the present, and using the PC to either learn skills or find new opportunities for the future, as a conscious rational decision. These significant trade-offs between valuations of the present and the future are indeed exacerbated among low-income families, given the context of high uncertainty in which they live from day to day.

VII LIMITATIONS, FURTHER RESEARCH AND CONCLUSION

In conclusion, we hope this paper has provided evidence for the view that “ICT access” is both an intrinsic good in promoting agency capabilities and an instrumental good in promoting welfare capabilities. We can expect ICT adoption to translate to measurable welfare outcomes when certain critical

complementary variables (y_w , p , d and y_e in our model) also correspondingly change. In the interim though, using paternalistic strategies to override the choices of local Users is indeed anti-development, if we fully adopt the tenets of the capability approach.

A note to two major issues not addressed in this analysis is necessary. We have not addressed the range of possible “mixed equilibria” that would, in our example, allow for a portion of usage over time to be towards strictly Welfare-related applications (maximizing returns to Paternalistic Providers) and another portion towards strictly Entertainment-related applications (maximizing returns to Users). Correspondingly, in constructing applications as either welfare-related or entertainment-related, we have not addressed the category of “mixed applications” that are effective in achieving both kinds of outcomes (e.g. educational games). Second, as noted in VI B, while we have focused on the difficulty in achieving a consistent collective choice between Users on the one hand and Providers on the other, there are numerous intra-group collective choice inconsistencies and paternalistic tendencies that can be explored in subsequent analyses.

We are aware that we have drawn a stark contrast between welfare and agency here. The purpose is not to detract from reality, but indeed to enhance the visibility of a central conflict that abounds in the real-world implementation of ICTD projects. In highlighting the importance of agency, our hope here has been to emphasize the importance of people's values and valuations of what they consider important to them. We believe there is extensive scope for this research in the “ICT for development” field [21, 58]. One major recommendation would be to conduct more “ethnographic style” research, which allows for immersion into the life of those studied [61] and perhaps, as in our case, illustrate the discrepancies between interviews and observations. For example, Kanungo [62: 410] in his study of the MSSRF village knowledge centres states that they are “community owned” but a severe weakness is that in his research “limited direct interaction took place with users”.

Regarding welfare, we are subject to the same criticisms as the post-developmentalists, who are accused of stereotyping “development” by not recognizing its diversity, such as grassroots activism, the use of locally-based intermediaries, and so on [63, 64]. Equally, for all its weaknesses, welfare-focused development has brought many material improvements, which free market mechanisms could not have provided [65]. The challenge is that in present welfare-based “ICT for development” interventions, this material gain is harder to find. We do not claim that people are not interested in their own welfare, but that this value is hard to see and turn into tangible welfare gains in ICTD projects, given the numerous factors that influence the translation of welfare information into welfare outcomes in developing country contexts today. Our paper points to some of those concrete interaction parameters that must necessarily be influenced, if information access is to turn into welfare gains.

Finally, in proposing “ICT for development” projects, as [35] state, we should think about our own reasons (and responses) for doing things, which might partly help understand the complex motivations of intended “beneficiaries”. Furthermore, we should continually reach out to those enablers from the state as well as from the users themselves that allow particular information to be both sought out actively, and processed effectively to affect people’s lives and choices in truly capability-enhancing ways.

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