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Testamentary Control of Keyboard Focus in Family Directories

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Abstract

A family directory can preserve the keystroke that selected a deceased relative while assigning its focus to a surviving member. We examine a testamentary control for this assignment. A holder leaves first position under a typed initial to a child, with a second child as contingent beneficiary. Each beneficiary must be reachable by that initial. We evaluated the control by executing each instruction twice, once as filed and once after deleting it. In a reference population constructed from US Social Security name counts, 13.80% of one-letter bequests executed. Of those, 95.17% gave focus to the same child as the ordinary sort order. Even a holder who always preferred the younger eligible child changed the first suggestion in only 0.67% of estates. Five successive transfers preserved 2.76 bindings per 10,000 founders. An alternative procedure, in which a family reserves its letter before naming one child, had exactly the same survival probability as providing a second beneficiary. We give separate measures for executing the instruction and honoring a preference the directory would otherwise have disregarded.

CCS Concepts

• Human-centered computing → Interaction design theory, concepts and paradigms.

Keywords

digital inheritance, keyboard navigation, prefix selection, family directories

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1 Introduction

When a member of a family directory dies, an initial that used to select that person may still select someone. A family might have used G followed by Return to open Gabrielle's profile for thirty years. After the profile is retired, the identical sequence opens Grant's. An ordinary change in sort order has disposed of a binding that the family knew how to use.

We consider a directory in which Gabrielle can leave G to a particular person. Grant and Gabriel already have profiles. Grant enrolled first and would ordinarily take G. Gabrielle can file an instruction giving the first suggestion to Gabriel, with Grant to take it if Gabriel is ineligible. Her files pass under the existing arrangements for those files. The only item disposed of here is the right to receive keyboard focus when somebody enters G.

A bequest can execute without affecting anyone's next keystroke. If Grant is the only surviving member whose name begins with G, the directory will select him on G whether his mother provided for him or died without instructions. Counting both cases as successful transfers gives a plausible but incomplete account of what the control does. We measure the difference by removing each instruction and replaying the same lookup against the same surviving profiles.

2 Prior work

Odom and colleagues brought three devices into interviews with eight families to examine how digital materials might pass between generations [2]. Their objects gave families something specific to receive and keep. The item considered here is a relation between an input sequence and a record. The heir can receive it without receiving any of the former holder's photographs or correspondence. It can also be lost while every file in the family remains intact.

The order of candidates has consequences even when all the entries remain accessible. Sears and Shneiderman studied selection frequency as a basis for deciding which items to put at the top of a menu [3]. A testamentary instruction gives an individual authority over that position after their own entry disappears. MacKenzie's treatment of predictive input separates the stem that brings a candidate into view from the operation that confirms it [1]. We preserve both parts. For a one-letter binding the stem is the founder's initial and the confirmation key is Return. A transfer succeeds only if the saved sequence, played without modification, opens the beneficiary's profile.

3 Disposition and replay

3.1 Directory behavior

The unit of analysis is one occupied binding in a household directory. While the holder is alive, the directory pins that profile first for the registered prefix. The holder may file an ordered list of two profile identifiers. At the holder's death the directory removes the old profile from active suggestions. It tests each listed beneficiary in order and pins the first whose current name begins with the registered prefix. An ineligible beneficiary remains in the directory. If neither qualifies, the instruction lapses. The executor can distinguish the profiles of two relatives who have the same given name.

For comparison, we delete the filed instruction just before the death event. The directory then offers the earliest enrolled surviving match, if one exists. Both replays use the same prefix filter and enrollment dates. Throughout the experiment the eligible directory contains the holder's two children, enrolled in birth order. No other active profile competes for this binding. At successive transfers the experiment follows the new holder's own child directory, keeping the founder's prefix.

Figure 1 shows a disposition that requires an instruction. Both children can receive the binding. Changing the beneficiary alters

the next focused row. The rest of the analysis includes cases in which the estate record changes and the focused row does not.

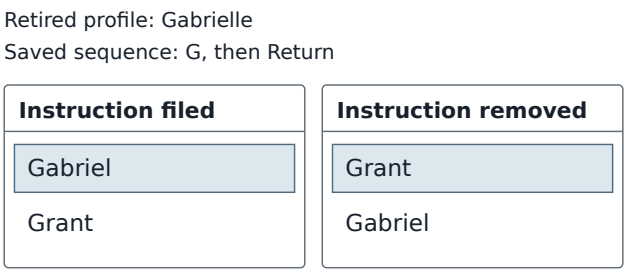


Figure 1: Replay of one directory after the holder's profile is retired. The two executions use identical surviving records. A highlight marks the profile that Return would open after G.

3.2 Outcomes

We record *execution* when at least one named beneficiary qualifies. We record *effective disposition* when filing the instruction also changes the identity selected by the saved sequence. Lapse is an absorbing state for a lineage. If a granddaughter later acquires the same initial through a fresh registration, we count that as a new binding.

We tested a single designation of the elder child, and a contingent designation of the younger with the elder as alternate. The second order deliberately opposes the directory's default. It gives the control the greatest opportunity to affect the screen in a two-child family. When a single designation lapses, the ordinary menu may still return the other child. That outcome supplies no inherited pin and has no descendants in our survival count.

3.3 Reference population

The Social Security Administration reports the 200 most frequent given names in each of two sex-specific lists for US births in the 2010s [4]. Pooling the counts by spelling gave 398 distinct names and 18,864,043 occurrences. We drew the founder with probability proportional to this pooled count. The first child was drawn from the same distribution. We then excluded the first child's spelling and normalized the remaining counts for the second child. A parent and a child may share an entire name. Siblings may share any proper prefix. We used distinct sibling spellings to keep exact duplicate labels out of the comparison. The same-name exception across generations allows a full namesake to inherit.

For each of the 158,006 ordered pairs of sibling spellings we computed which of their prefixes were represented and which were represented twice. We weighted each pair by its ordered draw probability. Thus the calculation uses individual name frequencies as inputs. The underlying table supplies neither pedigrees nor wills. Each new generation uses the same draw rule independently, conditional on the inherited letters. We also ran the calculation with equal weight per spelling and with an explicit tendency to name the elder child after the holder.

Let p_i be the founder mass on prefix i, and q_i the probability that at least one child qualifies for that prefix. For a contingent designation, the proportion of founder bindings surviving g transfers is

$$S_g = \sum_i p_i q_i^g. \tag{1}$$

For a single designation of the elder child, replace q_i by p_i. The exponent applies within each letter because an inherited G remains a G. Multiplying the overall one-generation rate by itself would give each successive holder a newly drawn initial. All results are finite sums under these assumptions. We report sensitivity to the draw rules in place of sampling intervals.

4 Findings

4.1 The effect of deleting the will

Per 10,000 founder bindings, about 1,380 contingent bequests executed. Deleting all 10,000 instructions changed about 67 subsequent selections. Table 1 gives the underlying partition. The two cases with exactly one eligible child account for most of the gap. In each, the filed instruction and the fallback order identify the same survivor by different procedures.

Table 1: Outcomes on the first transfer, with the younger child designated first. Percentages use all founder bindings as denominator. A blank match returns no profile.

Matching children	Filed	Deleted	Share (%)
Neither	None	None	86.204
Elder only	Elder	Elder	6.565
Younger only	Younger	Younger	6.564
Both	Younger	Elder	0.666

Of the bequests recorded as executed, 4.83% changed focus. This is an upper bound over orders of the two beneficiaries in this model. Where both qualify, a holder can either confirm or reverse the default. Everywhere else, changing the document cannot change the result of Return. If the family normally prefers its elder eligible child, the estate register will accumulate successful filings without a single effective disposition.

A two-letter estate was less likely to pass. There were 111 distinct two-letter prefixes, against 24 initials. With two letters, 3.840% of contingent bequests executed and 0.049% changed focus. Extending the stem made the founder's old selection more specific at the cost of reducing the number of children to whom it could be left. Giving equal weight to each spelling in the one-letter analysis yielded 13.22% executed and 0.61% effective.

4.2 Survival through successive estates

A contingent designation nearly doubled the one-transfer rate relative to naming the elder child alone. Its advantage increased with follow-up (Table 2). After five transfers, roughly one in 3,628 one-letter bindings still operated by descent. With two let-

ters the corresponding expectation was about one surviving binding per 836,000 founders.

Table 2: Surviving bindings per 10,000 founders. Each column follows the same key sequence through the indicated number of transfers.

Transfers	Elder only, 1 letter	Either, 1 letter	Either, 2 letters
1	723.14	1,379.59	383.99
2	69.24	247.94	22.13
3	7.71	51.45	1.60
4	0.94	11.60	0.13
5	0.12	2.76	0.012

The surviving bindings had a different composition from the original estates. A represented 14.37% of founders but 70.94% of the five-transfer survivors. J supplied a further 19.34% of survivors. A directory constructed from intact lines of succession would thus give a distorted picture of which letters families initially held. No preference for those letters was coded into the filing control.

4.3 Reservation before naming

There are two ways to supply an alternate. The holder can list two children and let the executor choose the first eligible one. Alternatively, the family can reserve the founder’s letter before naming its sole child. It submits two distinct candidate names in preference order, using the first that qualifies and its original first choice if both fail. Under the same ordered draw distribution for proposals, these procedures have identical survival at every generation. For each fixed letter they both succeed on precisely the pairs counted in q_i. This equivalence concerns the persistence of the input sequence. The two estate plans issue instructions to different people and at different times.

A naming convention can affect the figures substantially. In a sensitivity analysis we gave the elder child the holder’s full name with probability one quarter at each generation. In the remaining cases the original rule applied. Under the namesake branch the second child was drawn with the elder spelling excluded as usual. Conditional survival in one generation became $0.25 + 0.75q_i$. This raised one-transfer execution to 35.35% and five-transfer survival to 70.57 per 10,000 founders. The one-quarter value defines a comparison population. There is no estimate of namesake frequency in the source data.

5 Design implications and limits

An estate form could show a holder the two replay results before accepting a designation. In the worked example it would display Gabriel under the filed order and Grant under the ordinary order. If Grant alone qualified, both fields would read Grant. Such a comparison would allow the holder to reserve judgment about filing while both children’s current spellings and enrollment dates were visible. A later name change would call for a new replay.

A directory can dispense with the prefix condition by installing the inherited sequence as a private alias. Then G can reach a child named Emma, and a bequest to either enrolled child executes in every case. The cost is visible elsewhere in the interface. Typing G may now present a profile with no G in its name. An audit of execution alone would favor the alias implementation even if a family values correspondence between the input and the name. Study of that preference would require showing users both results. Our enumeration supplies no observations of bereaved users.

Actual family directories include spouses, surviving siblings and members who enroll out of birth order. Their presence may change the fallback recipient even with one eligible named heir. The 4.83% figure therefore belongs to a directory with two surviving rows and an elder-first default. The multi-generation results also hold the naming distribution fixed for a period far longer than the decade used to estimate it. They measure attrition caused by the filter itself.

For an implementation, the minimum record for auditing a bequest comprises the saved prefix, the filed recipient and the recipient obtained with the filing removed. A field recording that the transfer completed cannot establish which relative, if any, owes their position in the directory to the deceased.

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