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## Expanding our conceptualization of program implementation: lessons from the genealogy of a school-based nutrition program

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### Abstract

This work presents a theoretical framework in which health promotion and health education program implementation can be conceived as an open dynamic system. By tracing the evolution of an elementary school-based nutrition program from its conception to its recent form, we construct a program genealogy. Data were derived from two interviews and three historical documents from which historical events were identified and reconstructed in the form of a tree analogy. Data analysis ensued using concepts from the actor-network theory about social innovation. These concepts identified social and technical program attributes and situated them within a process which evolved over time, thus permitting the program's genealogy to appear. The genealogy was found to be influenced by the ways in which the involved actors interpreted the issue of food security, namely, as a professional issue, with a nutrition education response and as a social issue, with a community-building response. The interaction between the interests of the actors and the technical components of the program resulted in three temporal program iterations. The results highlight the important role played by the involved

actors during program implementation and suggest the need to take these interests into consideration during all phases of program planning.

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### Introduction

Programs have life cycles [1, 2] and history [3], with components which can be redirected as they evolve [4]. Recent work suggests that a program sustainability process essentially begins during its planning and implementation [5] and is dependent upon program modifications over time [6]. Program implementation literature, however, typically portrays programs as static entities which are more dependent upon decisions made during planning than what seems to happen in real life. In this sense, program implementation is judged against 'model program' standards for program delivery in order to determine its potential for effectiveness [7, 8]. Results from a wide range of health promotion programs implemented in the school setting suggest that programs are rarely implemented as planned [9–12]. In this regard, there is a need for 'a body of knowledge based upon practical experience of program delivery on the ground' [9] (p. 30) in order to advance understanding regarding the circumstances that enhance program implementation. The present work responds to this need by analyzing the evolution of a school-based nutrition program as a dynamic system, taking account of the program's technical features as they change in interaction with the interests of relevant actors.

Health promotion programs are commonly identified by their technical attributes, which include

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a statistical definition of the problem, a program theory represented by a logic model, products and services [13]. These relatively fixed attributes contrast with other parts of the program which are less stable, amenable to control, and predictable, namely the people behind program planning or implementation. While such social attributes are not typically considered within health promotion or education programs, they have been found to have important influences on the development and perceived value (and use) of community [14] and school-based [15] health promotion. Social attributes described as learning processes among the implicated actors have also been described as interrelated to changes in program design and activities over time [16]. Within the health service literature, the values, interests and power distributions of concerned actors are presented as being directly implicated in the adoption of innovations [17, 18], where innovations refer to entities such as new technology or a new idea, product or program [19].

We argue that the current literature on health promotion and education program planning and implementation has been overwhelmingly centered upon the technical program attributes. The social processes inherent to the intersectoral and collaborative partnerships called upon by the Ottawa Charter [20] are understudied and their impact on program planning and implementation still inadequately theorized [21]. Adopting the view that health promotion programs are ‘negotiated spaces’ resulting in a ‘constant evolution of program contours’ [14] (p. 1296), we further suggest that the implicated actors and their interests are essential components in the development of a program’s model and to understanding the features which contribute to a program’s success. A program genealogy would reveal those interests and negotiations that critically oriented program implementation. Diverging from the commonly held interpretation of genealogy as a map that uncovers an origin through sequential descent, genealogy is understood here in the Foucauldian sense where history is understood as sporadic and contingent, lacking the continuity and predictability often associated with ancestry [22].

Within the ‘social innovation process’, innovations are developed through a continual interplay between both social and technical processes [23, 24]. Taking conceptual guidance from the actor-network theory, the aim of this article is to construct the genealogy of a school nutrition program. This analysis will identify both the social and the technical attributes of the program and analyze how they interacted to change the form of the program from its conception up until 2002. In particular, we will demonstrate that program form is associated with the interests of social actors and that these interests change over time as a result of new opportunities and challenges.

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## The program

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The program *Petits cuisstots–parents en réseaux* (Little Cooks–Parental Networks) (hereafter referred to as PC-PR) aims to build culinary abilities and nutritional knowledge among children and their families living in disadvantaged Montreal neighborhoods. The title of this program ‘Little Cooks–Parental Networks’ captures its two components. ‘Little Cooks’ is aimed at primary school children and is animated by nutritionists with the assistance of the classroom teacher and volunteer parents. This classroom component is composed of a series of interactive hands-on nutrition workshops introducing a range of nutritional, culinary, cultural and agricultural concepts, along with integrative exercises that teachers can use as illustrative material in regular curricular activities. The second program component ‘Parental Networks’ is run by community development workers and aims to support the development of mutual support networks through parents’ active involvement in the program. This component joins the first through invitations given to all parents to participate in the nutrition workshop and also to join their children in at least two annual events. The ultimate objective of the PC-PR initiative is to promote healthy behaviors and attitudes through an increased capacity to transform raw foods into nutritious meals and also to promote citizenship and a sense of social conscience among young school children and their families.

## Methodology

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The objective of this paper is to construct the genealogy of PC-PR as a school nutrition program evolving from other nutrition-related community initiatives. The genealogy metaphor follows from the work of Foucault [22] who conceived of genealogy as a historical inquiry that does not attempt to establish linear continuity between events and that demonstrates the origin of things only in relation to and in contest with their socio-historical context. The social innovation process as modeled by the actor-network theory primarily developed by Callon [23, 24] provides the conceptual tools which were used to create the genealogy of the PC-PR program. From within this framework, the ‘sociogram’ refers to all the actor networks which interact with each other and with the innovation. The grouping of actors into networks arises from the collective interest held by a group toward the innovation and anticipation of the innovation’s response to a particular issue (i.e. the problematization). The ‘problematization’ thus refers to the manner in which the issue, as well as all actors’ roles and identities are defined. Actions surrounding the advancement of innovations are described by the interests and values of a ‘network of actors’, along with the power differentials between them. The ‘techno-gram’ refers to the program’s activities, services and resources, along with the theoretical or ‘logical’ framework or mechanisms. ‘Controversy’ refers to an obstacle or conflict which forces the network of actors to reorient or expand the problematization.

This analysis was developed through interviews with two individuals credited with the elaboration of the program, along with three program documents [25–27]. A parent who created a collective kitchen in the early 1990s, and who was at the origin of the program was first interviewed. This information was validated against a program document [25] and was used to construct a tree illustration of the program’s evolution. A second interview was completed with the current program director. Using the tree illustration as a guide, the primary objective of this interview was to validate the tree

model, fill in incomplete information and expand upon details. These data were validated against two program documents [26, 27]. The genealogy was recirculated to three additional informants having a longstanding interest and/or involvement with the program (i.e. school board coordinator, community activist/worker). This process of exchange between interested actors and the paper’s authors continued until the constructed genealogy was judged to accurately reflect the development of the program.

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## Results

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### The genealogy of PC-PR

The evolution of a school-based nutrition program from 1989 to 2003 has been illustrated with the use of a tree analogy (Fig. 1). While food security remained the key issue associated with the program, its characteristics varied according to the interests and underlying values associated with appropriate responses to the issue of food insecurity. Analysis of the program evolution revealed three distinct temporal program iterations that are clearly related to one another but correspond with transformations of the functional interplay between the socio- and techno-grams resulting from iterative problematizations and controversies.

### Program foundation: expanding program with community networks

The first iteration ranged from 1989 to 1993. In 1989, two distinct networks of actors came together to initiate a collective kitchen in a poor neighborhood of Montreal. The first network was composed of mothers volunteering at their children’s school as lunchtime monitors. The second actor network consisted of nutritionists who were mandated through public health interests to initiate collective kitchens in disadvantaged Montreal communities. From a health professional perspective, the collective kitchen represented a solution to food security which valued actions to build family capacity to eat well-balanced meals at reduced costs. However, for the mothers, the collective kitchen corresponded

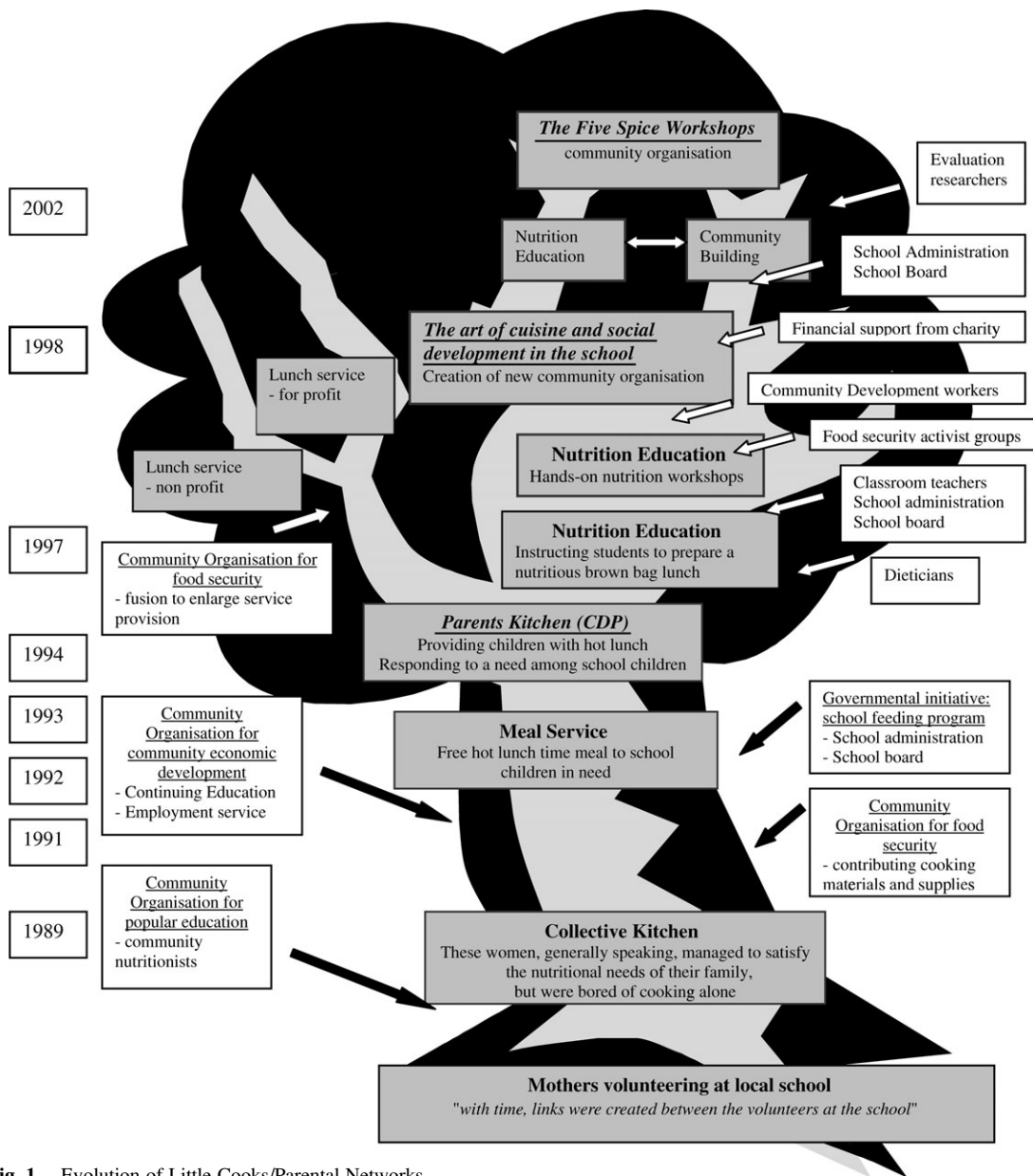


Fig. 1. Evolution of Little Cooks/Parental Networks.

to a value of togetherness and represented an activity to break the monotony and solitude of preparing family meals alone. Thus, the collective kitchen began in 1989 with a group of mothers whose pri-

mary interest was neither financial nor nutritional, but rather social. In time, mutual support, affection and encouragement permitted a less self-serving value to appear within this collective and a pre-occupation

with the school children and the quality of their lunches. The fruition of this interest into a concrete response was facilitated by the professional credibility of the community nutritionist who provided access to a school-feeding program offered through the government. Fueled by a concern for the community's children on the one hand and by the public health value of feeding underprivileged children on the other, the mothers expanded the techno-gram to include a free hot lunch service.

Controversy eventually arose as a result of this expansion. Eligibility for the government-feeding program required certain conformity in program deliverables, including food safety and participation. Such requirements assured the inclusion of health professionals such as nutritionists. While the growth in the program revealed an important need from within the school community, the existent resources were not able to meet the large increased demand for lunch services. Due to the mothers' strong presence in their community and the professionalism associated with the collective kitchen and food service techno-grams, this initiating actor network attracted the interest of established local community organizations willing to support the need for resources. This contribution increased the number of actor networks associated with the program, inevitably resulting in the negotiation and inclusion of new and varied interests. Two seemingly divergent techno-grams appear during this iteration: continuing adult education and employment service. This period can be described by an expansion of the definition of food security from being centered uniquely upon food acquisition, preparation and quality, toward a more encompassing conceptualization associated with community-building values such as self-betterment and collective support (i.e. continuing education and employment). This common underlying value drove the program and permitted it to evolve as one unified program.

This program iteration is also characterized by the expansion of community partnerships, where the newly associated actor networks representing local community organizations did not have professional or institutional interests. Although the pro-

gram was initiated upon a community-professional partnership (i.e. between mothers and nutritionists), the identity of the initiating actor network was associated with its composition of community members. It was through this identity that the initiating actor network had a legitimate community voice and could continue to represent an expanded problematization of food security through the introduction of new actor networks. The professionalism associated with the presence of the nutritionist facilitated this legitimacy but did not define it. The actor networks associated with the education sector likely recognized the importance of good nutrition in general and perhaps to learning in particular, however, at that point they did not have a distinct interest in the program apart from supporting the minister's food service program. As suggested in the next section, this may have been due to a perceived distinctiveness between food service and educational mandates.

### **The second iteration: interest divergence and program rupture**

The second program iteration, from 1994 to 1998, is marked by a continued growth of the hot lunch service techno-gram together with a reinsertion of the educational and nutritional actor networks. While food security remained the focal point of the program, controversy arose during this period due to a divergence in problematization. The initiating actor network increased its level of expertise, expanded the lunch program and formalized itself into a community organization 'Cuisine des parents' ('Parents Kitchen' hereafter referred to as CDP). Meanwhile, children who participated in the food service program were advancing into their final years in elementary school. This triggered the initiating actor network to reflect upon the need to prepare these children to fix their own lunches. This new interest revealed a shift in values from serving those in need, to building self-serving capacities. Consequently, the initiating actor network attracted the interest of educational and nutrition actors, which resulted in the appearance of a new techno-gram. In 1995, the community organization hired a community nutritionist to teach Grade 6 children

how to prepare healthy brown bag lunches. This nutrition education lesson was given during class time, and represented an important shift in the program. By literally moving from the school cafeteria to inside the classroom, the techno-gram inadvertently captured the interest of the educational actor network, which would inadvertently result in changes to the techno-gram's form.

This phase is distinguished by the development of a new professional partnership between actors from the health and education sectors. The appearance of the expanded problematization of food security to include a role in education captured the interest of several schoolteachers who were willing to open their classrooms to the proposed nutrition education lesson. This joint interest and joint professionalism between educators and nutritionists resulted in financial assistance contributed by the school. The presence of these actors influenced the form of the techno-gram where professionalism and standardization became one of its key features. When a new initiative from the Minister of Education to increase support to health education was presented, other schools were enticed into acquiring this nutrition education techno-gram. The techno-gram was introduced into several new schools as a standard program which educated students on nutrition principles through a hands-on cooking activity teaching children to prepare a range of nutritious meals.

Two distinct problematizations associated with food security were seen during this phase. One actor network focused its approach on a food service and community-building perspective and the other on an educational and behavior change perspective. In addition, part of the momentum of the growing nutrition education techno-gram was attributed to its professional identity. Consequently, the initiating actor network, composed principally of parents and community members was no longer a legitimate representation for the program which now included a nutrition education techno-gram. Together, the divergence in the problematization and the distinctiveness between the two actor networks were associated with the corresponding techno-grams, forcing program rupture. This rupture was characterized by the appearance of two distinct programs,

each with a distinct actor network, legitimately representing the program. One actor network was from the initiating parent actor network and the other from the nutrition actor network.

### **Third iteration: expanding a new program and meeting a new controversy**

The credibility of the nutrition education techno-gram was associated with its uniqueness and high level of expertise and professionalism. In this sense, the techno-gram was advanced or 'sold' as a complete package, somewhat closed to the input and influence from actors outside the nutrition actor network. While this feature of the program facilitated its creation as a distinct identity during its initiation, in order to survive the program needed to capture the interest of other actors, thus requiring an expansion in its associated problematization. The food service techno-gram became a routine service within several local schools. Due to the efficiency with which it operated, the program was extended into schools outside the original community, with the provision of lunches for profit. This enterprise fused with another community organization with a similar mission, and left behind its identity as CDP, along with several of its community-building techno-grams. While staff was principally composed of community members, the continuing education and employment services did not continue as an integrated component in the program. This specialization, stability and routine may have facilitated the institutionalization of food service techno-gram in the schools.

The nutrition education techno-gram continued to be identified as a high quality nutrition education program. While partial support for this program was provided through a governmental initiative and participating schools, in order to advance the quality of the techno-gram and its expansion into the school timetable, additional support was required. The program became associated with a provincial 'activist' group for food security and with a local food security community group. While these affiliations provided the program with the recognition it needed to solicit the financial support

of local charities, this expanded network also brought in new agendas, mainly based upon an expanded problematization associated with food security. A new program title 'Projet d'apprentissage à l'art culinaire et à la responsabilisation sociale en milieu scolaire' (The Art of Cuisine and Social Development in the School) captured this larger community focus which reintroduced community-building principles targeted at parents into the program. A private charity provided financial support for the program to advance into successive grade levels and new schools. This phase also saw changing interests on behalf of the schools subsequent to educational reforms stressing the need for schools to establish links with the community [28]. With a greater presence in the school and financial support from a private charity, pressures on the program to demonstrate effects were inserted, resulting in the introduction of an evaluation research actor network from a local university.

During this period, the name of the community organization changed to 'Ateliers cinq épices' (Five Spices Workshops) to represent its new and distinct identity. Likewise, the techno-gram was formalized and named 'Petits cuisinot-Parents en réseaux' (Little Cooks-Parental Networks) to represent both the nutrition education and the community-building components. Although social development workers were mandated to create and implement community-linking techno-grams, the nutritionist representation significantly outnumbered and outweighed representation from social development. Controversy regarding the appropriateness and effectiveness of social development techno-grams ensued. While the nutrition education techno-gram was well developed with a clear and understandable objective among the nutritionist and educational networks, the techno-grams which would allow the program to create and/or link to parent and community networks were not clearly defined nor agreed upon. Indeed, controversy increased during this phase due to the inability of the nutrition actor network to act as a legitimate spokesperson for the new program which included a social development component.

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## Discussion

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We present a model representing the evolution of a school-based nutrition intervention in the form of a genealogy. This model highlights the role of the actors' interests and values as unavoidable and desirable parts of program implementation and transformations. In this respect, the actors became engaged during the various iterations and differentially defined food security based upon their professional and non-professional interests and values. These problematizations gave form to program services and activities which evolved over time in interaction with shifts in the actor networks, their interests and values. Program rupture occurred when the actor network representing the program was not accepted as a legitimate representative of the interests of the involved actors. Findings also revealed a role of ancestry. As in the first program iteration, the third one describes food security as a social issue, whereby the techno-gram included a collective cooking activity aiming to build dietary capacity and facilitate the creation of associated parental networks.

Knowledge about program implementation in health promotion and health education has primarily been derived from theory of diffusion models [29]. These models have been criticized for their technical-rational perspective [15] where, for example, the adopting system is oversimplified as a group of unified rational actors [18]. While political and organizational structures of the adopting user system were added to these models and exposed an added level of complexity to implementation theory [1], their application often portrays implementation as a linear movement which is more or less facilitated by the nature of the organizational climate [30].

Notions of rationality or linearity have diminished considerably over the past few decades in the public policy implementation literature [31]. Current literature builds upon a conceptualization of the implementation process as a complex and lengthy chain of 'decision points' [32] involving actors with competing values, conflicting interests

and power differentials resulting in inevitable transformations from policy intention to practical reality [33]. In education, implementation of innovation considers the organizational learning culture in the schools [34], where for example, research into educational change asks how beliefs about teaching, learning and change are formed and reinforced, and how these beliefs influence the interacting roles which guide behavior as it relates to change [35].

The concepts problematization and controversy elaborated upon within the actor-network theory explain how compromise is negotiated between conflicting interests. This theory has been used in the field of health care management [18], where the process of implementation is shown to be dynamic, consisting of a coevolution between the network of supporting actors and the innovation. The analysis presented here is situated in the actor-network theory and thus provides empirical evidence supporting the conceptualization of implementation as a dynamic process involving the interests and values of supporting actors in interaction with the innovation. This perspective joins those approaches within the larger literature of implementation by recognizing that change is played out among people in interaction with institutional, organizational or cultural structures.

The degree to which a program adapts to local context has been referred to as a 'fidelity versus fit' tension [36]. For some, high fidelity to the critical elements of the program is essential, while for others, programs need to be reinvented or adapted to the needs of the various program actors [10]. A certain level of adaptation appears to be inevitable to preventive interventions [37]. Perhaps the dichotomization of debate into 'for' or 'against' adaptation, preclude advancing understanding of how actors interpret and interact with the program and the influence this may have on the program. As exemplified here, it is possible that when the program adapts to the interests of various actors the critical elements, in terms of sustainability and/or effectiveness, emerge or are inserted into the program. It could be argued, that despite attempts to narrow the problematization of food security to either food service or nutritional education, by virtue of its

openness, the critical elements associated with community building were inserted into the program. Restricting access to the program based upon a fixed definition of program contours may lessen the program's chances to effect change.

Despite debate over the appropriateness of fidelity to program planning, practical experience indicates that school-based programs are rarely implemented as planned [9–12]. While poor program implementation is often explained as a disjuncture between program and organizational goals [9], the reality likely reveals that with some flexibility, program implementation can evolve through a reconciliation among the values and goals unique to the implicated actor networks [15]. Models have been created to help program planners document changes in program plans and design over time [16] and may stimulate discussion to help planners widen their field of perception and consider how actors' spoken (and unspoken) interests may have been implicated in these changes. Planning also provides the opportunity for the contours of the program to be openly negotiated and thus may be most effective when interests, values and various power differentials among the actors interact with the innovation over time.

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## Conclusion

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Programs, like innovations are progressive. Tracing the successive transformations of a nutrition program as a social innovation process exposed a movement which is implicit to a program. This movement is based within the range of possible definitions and responses which can be given to a health problematic by the people involved. Over time, these definitions, and the ability of the services and activities to respond to them are successively reinterpreted. The evidence presented for the PC-PR program demonstrates this process, suggesting that health promotion programs may be most effectively utilized and effect change when permitted to develop new responses to health issues over time based upon the changing needs and interests of the people involved.



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## Conflict of interest statement

None declared.

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