



# 'Diguettes' in Burkina Faso: sustainable development or stones for bread?

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## Abstract

The article argues, on the basis of fieldwork in the Seno Province of northern Burkina Faso, that soil and water conservation measures in the form of the construction of stone bunds (popularly known as *diguettes*) should be analysed within a larger framework rather than merely as a technical means to increase productivity of the land. It explores reasons for farmer reluctance to diguette construction and attempts to explain why farmers may accept constructing them anyway. Explanations include an analysis of the relations between development projects and farmers which goes beyond simplistic notions of participation.

## Keywords

Burkina Faso, soil and water conservation, anthropology, development.

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Land degradation has for some time been seen as a major problem for Burkina Faso's agricultural development. Agriculture in Burkina Faso is mainly based on technologically simple hand hoe based cultivation of rainfed millet and sorghum. Inputs in the form of fertilizer and pesticides are very scarce. Rainfall is restricted to a short rainy season stretching from June to September with considerable variability and frequent droughts. Burkina Faso has thus been one of the countries said to be seriously hit by desertification. (Govt. of Burkina Faso, 1991)

A way of addressing these problems has been the promotion of soil- and water conservation measures at village level. The construction of *diguettes* in Burkina Faso has been one of the main soil conservation activities promoted by development agencies, governmental and non-governmental alike, ever since the desertification question came up in the seventies (Reij et al., 1996). *Diguettes* are lines of stones placed in the fields along contour lines with the aim of braking overland water flow and encouraging the deposition of sediment upslope (Batterbury, 1997). *Diguette* construction is fairly simple and cheap, but very labour demanding. The construction of *diguettes* can, however, take place in the dry season at times when other agricultural activities are at a halt and labour is normally

relatively available. *Diguettes* have in the course of the last two decades become quite widespread in rural Burkina Faso, especially in the central densely populated Mossi Plateau. The *diguettes* have, however, only rarely been analysed as anything other than a soil and water conservation measure.

This article is not about whether *diguettes* are effective or not in augmenting crop yields, (they indeed seem to be, at least in certain cases), but is rather an attempt to focus on *diguettes* as an example of a technical solution to a development problem being transformed into a vehicle to create linkages within the donor-recipient interface. It is about the methodological problems involved in the analysis of assessing impacts of and reasons for constructing *diguettes*, drawing upon experience from the Seno province in northern Burkina Faso.

Anthropological literature on development (Laurent & Mathieu, 1994; Crehan & van Oppen, 1988; Olivier de Sardan, 1995; Bierschenk, 1988; Long & van der Ploeg, 1994) suggests that the development project can be seen as an arena of possible conflict over economic, material, political and symbolic resources. Participation in development activities by farmers may, from this perspective, be interpreted not only as their effort to comply with project

objectives, but also as strategic positionings where environmental improvements are a stepping stone to create linkages to external agents. Seen from this perspective, the construction of *diguettes* can be seen as an element in the ongoing positioning and negotiation between the development project and the villagers.

Other theorists have emphasized how development discourse and narratives become influential in development policy-making within natural resource management, actualized in specific programmes, projects and methodologies of data collection and analysis (Hoben, 1996, 1998; Leach & Mearns, 1996; Roe, 1998; Marcussen & Speirs, 1998). These narratives describe how Sahelian agricultural systems have become "unsustainable" because of population increase, drought and lack of local capacity to adapt to new circumstances. This critical situation explains the necessity for external intervention in the form of rural development assistance introducing means to reverse the natural degradation. The construction of *diguettes* constitutes exactly such an example, in the sense that these are seen as a means to restore an ecological "equilibrium" which, when more thoroughly investigated, has never existed.

Finally, certain theorists have questioned the entire notion of development, by analysing donor/recipient relations not merely as 'partnerships' or 'patron-client-relationships', but rather as a field within which symbolic frontiers are demarcated through the enunciation of discourses of development (Ferguson, 1990; Laurent, 1996). *Diguettes* may constitute such a symbol of peoples' perception of 'development', which one can adhere to by constructing them.

These theoretical entries seem to provide important elements for a more thorough understanding of *diguette* construction in Burkina Faso. It is my argument that the construction of *diguettes* should be understood in the context of an analysis of the difference of donor and recipient rationalities and objectives and not merely as a productivity-improving technique. The aim is thus to pinpoint how these rationalities conflict at times, and are tied to different discourses of development. The confrontation of such different rationalities, the negotiations, the unpacking and the differences in the logics of donors and beneficiaries, very common within rural development projects, constitute a complex social phenomenon which has not been given enough attention in the case of *diguette* construction in Burkina Faso, or has been treated too superficially (Atampugre, 1993; Critchley, 1991). It also calls

for a reassessment of the possibilities of building partnerships between development projects and farmers on the basis of activities like the *diguettes*.

### ***Diguette* construction in Burkina Faso**

*Diguette* construction has been seen by many development projects as an effective answer to reverting the degradation of agricultural drylands, and even of recuperating degraded soils in rural Burkina Faso. It is, however, a daunting task to estimate more precisely to what extent these initiatives are effective in rendering the land use more sustainable or boosting the yields. On-farm trials have been very difficult to undertake, due to the lack of precise measurements of the yields before the construction of dikes, the variation in yields from year to year because of erratic rainfall and all sorts of other contingencies (workforce availability, manure availability, insect attacks, theft, animal intrusion, fire etc.) which make more precise estimates very difficult. In Burkina Faso a number of attempts have been made (for a thorough review see Batterbury, 1997). Gubbels (1994) cites what he terms "informal evaluation" for indicating that the construction of *diguettes* on this project in the Yatenga Province in the north-west had improved yields by 40 % on treated versus untreated fields. Other tests (cited in Atampugre, 1993) show increases of between 12 and 64 %. It is, however, very difficult to make a *ceteris paribus* estimate. At the same time, there seems to be an agreement on the fact that more time has to pass in order to be able to assess more long-term impacts of *diguettes*.

The most thorough analyses have been made under the auspices of Chris Reij, and the results are summarized in a World Bank Paper (Critchley et al., 1992). This report notes that earth bunds promoted in the seventies had been a failure, while the introduction of stone bunds in the eighties was a "success story." Whereas approximately 150 hectares were treated in 1982/83, this had jumped to an estimated 5000 hectares in the dry season of 1987/88, farmers "engaging voluntarily in the field." This report estimates an overall yield improvement of 40 % the first year after construction. The 40 % increase is estimated through measuring treated fields vs. non-treated fields.

Certain estimates have been made in the nineties in connection with the "Six-S"-NGO based in Yatenga and financed partly by DanChurchAid. (Seddon & Kafando,

1996). These estimates state that a difference of between 15 and 165% has been observed between treated and untreated fields. Nothing is, however, revealed as to how these measurements have been made, nor are we told much about what the yield would have been on the treated field if the *diguettes* had not been constructed. In their discussion of the *diguettes* they largely refer to Atampugre.

In the course of the eighties, and into the nineties, *diguettes* have been developing into one of the most widespread forms of natural resource management support from international donors to Burkina Faso farmers. Long-term assessments of yield impacts have, however, not yet been made (Batterbury, 1997). Furthermore, it is worth noting that investigations rarely take into account the fact that *certain actors have no interest in proving that they are not effective*, a point that shall be dealt with below. There are, however, numerous accounts of farmers and *animateurs* praising the *diguettes*: "With *diguettes*, we renew our hopes"; "the suffering (in connection with the construction of them) is worthwhile"; "everybody now ventures to Mr. Ouedraogo's farm to see his *diguettes*" etc. Project aid-workers likewise often refer to the farmers' interests when justifying *diguette*-construction.

However, there is concern about the fact that farmers apparently do not continue constructing *diguettes* after a project intervention phase, even though they praise them as very helpful. Even though the *diguettes* seem to boost yields, they remain very labourious ventures; the transport of stones often necessitates the assistance of a truck, as the necessary amount of stones is often not locally available, and the work involved in the construction of the *diguettes* amounts to approx. 50 person days/ha (Vlaar, cited from Batterbury 1997), depending on the given surroundings.

Certain other explanations why farmers are so enthusiastic may therefore be:

- Compliance with what is suggested by development institutions may be a way of trying to assure the perennality of the development activity and maybe even open up for other extension activities like credit etc.;
- The farmers have an interest in stressing the positive aspects of the intervention by the development agencies, as in their view this will enhance the possibility of increased external assistance;
- It is impolite to criticize something proposed by a development agency when being interviewed by a potential external donor.

It is obvious that testing these hypotheses, while at the same time questioning the validity of the quantitative measurements showing clear production increases, is problematic. Contesting scientific on-farm research which is furthermore backed with enthusiasm by all involved actors demands a certain solidity of argument. However, it is worth remembering that testing these hypotheses does not necessarily imply challenging findings which show that *diguettes* increase yields. Looking into the above hypotheses might however help explain why *diguettes* are not being more adopted outside project-based frameworks.

### Recipient reluctance towards *diguette* construction

In fieldwork done in the Seno province in Northern Burkina Faso, the aim was to look at donor/beneficiary relations, especially at the Danish DANIDA/PSB Natural Resource Management project based in the town of Dori, which has been operating since 1990. Interviews with farmers in villages where the project was operating made it apparent that an analysis of the relations between the farmers and the project that supported the construction of the *diguettes* was crucial. In this area farmers were seemingly much less enthusiastic regarding the *diguettes* than the farmers mentioned in the literature from the region of Bam and Yatenga (Atampugre, 1993; Batterbury, 1997). Again, there might be obvious explanations, including the facts that

*diguettes* are more effective in high rainfall areas;  
*diguettes* make most sense when extensification of the cultivated area is difficult;  
*diguettes* make most sense where labour is not the principal production bottleneck;  
*diguettes* are not that useful on the sandy soils of the Seno Province.

But apart from these rather 'technical' explanations it seemed necessary to go more thoroughly into an analysis of the relations between the farmers and the development institutions promoting the *diguettes* in order to understand why they were being constructed. As Bierschenk states, "One must begin with an analysis of the project's participants and other interest groups, the goals and reasons for their negotiations, resources they have at hand – in short of their own respective projects" (Bierschenk, op.cit: 174).

The DANIDA/PSB-project was launched in 1990, aimed at establishing local institutions capable of assuring a more

sustainable use of the natural resources. At the time the project was executed by UNSO (United Nations Sudano-Sahelian Office), but financed by DANIDA in a multi-bilateral arrangement. With the changed mandate of UNSO, now being the UNDP-agency for the implementation of the International Convention on Desertification, DANIDA has taken over the execution of the project. It is part of a larger programme, the *Programme Sahel du Burkina Faso* (PSB), which is made up of three natural resource management projects in the Sahelian region of the country, the two others financed by GTZ (German) and through Dutch cooperation. These are based in Dori and Gorom Gorom, 52 km north of Dori. The three projects have split the region between them, and all work with the same "*Gestion de Terroir*"-approach.

The idea behind the "*Gestion de Terroir*"- approach is that the enhanced pressure on natural resources necessitates more formal institutional arrangements at village and inter-village level in order to halt degradation. This implies the establishment of "*Comités de Gestion de Terroirs*" (CGT) at village level and the creation of "*Unités Agro-Pastorales*" (UAP) regrouping representatives from different CGTs on a zonal level. These institutions should thereby be able to make decisions as to the use of common and private lands, and they are supported by

- training programmes;
- soil- and water conservation measures (SWC);
- credit programmes;
- water facilities.

The training programmes include literacy training, and "*animation*" in the form of support to the creation of CGTs. The SWC measures consist mainly of support to the construction of *diguettes*. The support needed for the construction of these is first and foremost the transport of the stones and secondly some advice on how to construct them. Credit programmes, which are very small scale, are addressed mainly to women and consist of credits for animal fattening and other small-scale income generating activities. Finally, water facilities consist of wells, boreholes and the so-called *boulis*, large dug-out tanks collecting surface water mainly for the watering of cattle in the dry season.

Complicated relations prevail between the project *animateur* who was hired by the DANIDA-project in order to assist farmers in the construction of the *diguettes*, and the villagers. It is the task of the project *animateur* to create village committees to deal with the management of local

natural resources, according to the objectives of the DANIDA *gestion de terroirs*- project. This work includes the creation of *Comités d'Actions Spécifiques* (CAS) which are mainly established to organize *diguette* construction. The *animateur* of the project is under pressure from his boss to produce results. The number of successful credits disbursed and reimbursed, truckloads of stones for *diguettes* delivered, meetings with committees from different villages, and training programmes executed are signs of whether he is doing a good job. When the *animateur* of the DANIDA-project comes to a village proposing the activities of the project, he therefore usually ends up with a small group of people with whom collaboration is possible. This group might represent the people possessing a certain power in the village, or might be an opposition minority that tries to use the project to strengthen its own situation. In order to produce results, the *animateur* is furthermore tempted to persuade the villagers to embark on the project activities, even if they do not immediately think it is a good idea.

The villagers, notwithstanding the participatory character of the project, often still fear sanctions from the project like those they are used to if they do not comply with the government institutions such as the *Service de l'Environnement*. This results in the paradoxical situation that villagers sometimes engage in work in connection with the project even though they don't see the point, or even consider it stupid. This is especially the case with the *diguettes*. A typical situation found in fieldwork is as follows. The first year, the truck arrives and everybody shows that they are grateful that the project is being instigated, so they head off to collect stones. The next year, people are more reluctant; it is hot and there is a baptism in the village, so they send their sons off; they have never tried to ride a truck and are eager to participate in anything which disrupts everyday routines. The third year, however, the *animateur* finds it difficult to mobilize people, so he says to the villagers that if they build the *diguettes*, he will make an effort to see that the World Food Programme provides a truckload of food aid to the village. As he turns out to be unable to fulfill this promise, relations between the *animateur* and the village worsen, and he is often left with a small group of villagers constituting the *Comité de Gestion de Terroirs* and the CAS, who will then decide on grants of credits and other project elements that interest people.

James Ferguson (Pers. Com.) has suggested that the construction of *diguettes* might be interpreted as the con-

struction of "monuments of development" in a society where magical notions of causality prevail. Referring to his own fieldwork in Lesotho on a rural development project making terracing for highland agriculture, he quoted a farmer for having remarked that "I bet that in the U.S. farmers have terraces all over the place". He had thereby got the idea that the construction of anti-erosive measures were not exclusively to be seen as such, but equally as a demarcation of symbolic frontiers. By adhering to these activities and following instructions of the development project, the villagers adhere to a vision of modernity, which for symbolic reasons is understood as a strategy to escape their misery. The *diguette* is a symbol of their will to work actively for their development, and their will to submit themselves to people that apparently know what this development is and how to get there. Supplementing this view, P-J. Laurent (1996: 13) in his analysis of peasant associations among the *Mossi* in central Burkina Faso holds that certain villagers, especially the young, with the creation of their development association create a "culture of development", based on unity and conversion to Christianity. These two elements are important as these are protective against threats of witchcraft, very present in *Mossi* society. Simultaneously it is contingent on the adherence to a more "western" discourse of modernization. Laurent is thus in line with the thinking of Ferguson: development becomes a ritual you perform to contract with external forces.

Interviewing farmers in villages around Dori about their views on the *diguettes* did not directly corroborate these interesting views. Villagers were, perhaps because my interpreter had a good reputation in the villages, quite straight-forward in describing benefits and inadequacies of the *diguettes*, and when questioned more thoroughly, quickly started denigrating the *diguettes*:

"Ouah! Allahi! We are *Fulanis* and we like to show other people respect, so we have participated in the construction of *diguettes*. But these *diguettes*, they are really no use at all, and they can even be damaging, making one part of the field full of sand, and another bare laterite. They don't take into account the wind erosion" (Older farmer in the village of Belgou).

"With the *diguettes* we can no longer control the circulation of water in the field, and we risk waterlogging. If we need to halt the runoff, we make a small dike of

soil - this we have always done" (Farmer in the village of Petecolé).

"The idea that *diguettes* should be of any use is stupid. And even if they were effective it would never be worth the very hard work of constructing them and paying for the truck" (Farmer in the village of Boudoungél).

As one can see, no hocus pocus, but arguments based on a rationality embedded in elements like profitability, productivity and security. With such a clear rejection of the effectiveness of the *diguettes* as a productive measure it is tempting to conclude that they construct them to maintain contact with the project.

However, it seems that the *diguettes* function as "monuments of development" for certain other actors. The German anthropologist working at the "Projet Agro-Ecologie", a project supporting the CRPA (*Centre Régional de la Promotion Agro-Pastorale*), the regional agricultural extension service, stated that this project particularly encouraged the construction of *diguettes*, because "Here, at least we do something concrete and visible" (As opposed to training programmes where the actual result is obviously very difficult to measure). The question of whether it is among donors or peasants that magical notions of causality are prevailing may furthermore be exemplified in the training in "environmental awareness" which also faces problems on village level. An *animateur* told me that "it is very difficult to make peasants understand that it is through the planting of trees that we can increase rainfall and halt desertification." But the causal link between tree planting and rainfall is highly contestable, and is very likely to mystify the villagers further as to the capabilities of the project.

#### Different reasons for diguette construction

The question raised by the above discussion has wider implications, as I find it revelatory to use the example of the *diguettes* in a wider context when considering villagers' positionings *vis-à-vis* development projects. If farmers are indeed rational, why do they accept the continued construction of *diguettes*? Below, I shall attempt to list a number of reasons why donors and recipients alike may have their reasons. Why do donors encourage the construction of *diguettes*? Why do they see it as a good idea? It has to do with the influence of certain development

discourses prevailing within Sahelian natural resource management:

- *Diguettes* are a means to regain *sustainability*. *Diguettes* are seen as an instrument to restore an ecological equilibrium distorted by population increase and other unfortunate incidences. It is however highly contestable whether an ecological equilibrium ever existed within Sahelian natural resource utilization practices. What has been termed the “equilibrium paradigm” is being increasingly criticized (Leach & Mearns, 1996; Scoones & Thompson, 1994; Hoben, 1998), as being an a-historic narrative, with no basis in realities of the past. Natural resource management practices in Burkina Faso have not passed the threshold from being sustainable to becoming unsustainable. It simply does not make sense to establish carrying capacity limits, which are the natural consequences of this line of thought.
- *Diguettes* provide a *technical* solution to the problem of development. They are (even) low-cost, locally available and need not be repaired with spare parts difficult to obtain. Unlike fertilizers, which are imported, expensive, demand certain crop varieties, may damage the environment etc., *diguettes* are a pleasant way to merge local and imported knowledge.
- In that sense, *diguettes* furthermore provide an apparently *non-political* solution to the development problem. Anybody willing to construct *diguettes* can in principle do so, the work is carried out during the dry season when there is underemployment (especially among the men). It thus reinforces the belief, very common among development workers, nationals and foreigners alike, that it is possible to separate development and politics. Furthermore, in constructing *diguettes*, you apparently do not have to address issues regarding local power and politics.
- Construction of *diguettes* is seen as creating *growth*. Increasing yields in Sahelian agriculture is an objective which is very rarely questioned, and *diguettes* seem to constitute a local and technical solution. However, it is questionable whether farmers find it worth the toil to engage in *diguette* construction when it is easier to extensify cultivated areas. An obsession with growth and productivity maximisation often conflicts with farmers’ emphasis on food security.
- Donors furthermore see the construction of *diguettes* as *participatory*. By mobilizing people at village level just

by providing a truck for transportation and introducing the very simple technology of *diguette* construction, the activity lives up to a number of ideals often stressed as important: it deals with a target group which is difficult to reach and provides cheap solutions to local problems.

- *Diguettes* are *visible*. Training programmes, credit schemes etc. leave the development worker with the unpleasant and not unrealistic feeling that three years of toil in a dusty town of northern Burkina might not have made a great impact. With *diguettes* his/her project has a perfect example of an *impact*, which can be shown to evaluation missions and others looking for justifications to prolong the project.

Why do farmers want to establish contacts with development projects?

- The adherence to the construction of *diguettes* creates *dependency* vis-à-vis the project. Unless a project is clearly detrimental, one might argue that a farmer has little interest in providing critique of it. It seems to me to be important to pay sufficient attention to the fact that there is a strong urge among farmers to adhere to ‘*assistencialism*’ (Olivier de Sardan, 1995: 136), as this is their only linkage to external agencies and ‘development’. By *assistencialism* I mean an urge on the part of the villagers to ensure that the project intervention is prolonged as much as possible. In Burkina Faso being dependent on somebody (especially somebody rich) is often clearly preferable to being independent. When somebody notices that “you have to live up to your responsibilities as chief”, it not only means that you have to give precise orders, it also means that you have to take care of a lot of the problems of your subordinates. Independence, on the other hand, resembles *expulsion*, (Fiske, 1991).
- Farmers seek to avoid *self-reliance*. *Self-reliance* is an important notion within development discourse, but it is clearly a strictly normative and ideological term. Trying to benefit as much as possible from a development project seems a natural way to position oneself *vis-à-vis* donors. Being *self-reliant* within a village logic means being left alone. “Taking their future in their own hands”, a common term within NGO-rhetoric, remains a very unattractive option for the villager.
- Farmers stress *security*. Venturing into new agricultural

techniques and technologies can be a matter of whether you and your family are going to eat or not next year. A technique thus has to show that it not only increases production. But also that the extra labour put into e.g. the production of *diguettes* is not better invested elsewhere. And it has to show that it does not render the production system more vulnerable towards climatic irregularities and other calamities. *Diguette* construction, therefore, in the eyes of the farmers ensures that the project will "stay with them".

- Farmers dread *sustainability*. In his interesting book about *diguettes* in the Yatenga province "*Behind the lines of Stone*", Atampugre (1993, op.cit) describes how the OXFAM-funded *Projet Agro-Forestier* introduced *diguettes*. In a final discussion of the successes and shortcomings of the project, Atampugre is especially worried about the lack of overall environmental importance of the project, he sees no foundation laid for change, and he is concerned about ensuring sustainability (ibid: 134). A farmer comforts him by citing a Mossi proverb: "*It is like when you teach a child to walk. You stretch out your hand to enable it to take its first steps. If you leave it at this moment, it will fall back to its sitting position. You have to guide it a bit before you leave it. We are the children of PAF. PAF is teaching us to walk, but we cannot yet walk on our own. It will come but we don't know when.*" (ibid: 135) What worries Atampugre though is that he cannot see when this will be. When will the farmers be independent? It seems to me that he fails to recognize that self-reliance, sustainability and independence were never the objectives of the farmers, and what the farmer tries to do with his child/parent metaphor is to ensure the perennality of their patron/client relationship. (The sustainability problem of this project seems to continue, it has been transformed into a local NGO, but it is still very dependent upon external funding, see Atampugre, 1997).

Donors and beneficiaries alike, however, share the objective of promoting *development*. For certain farmers, especially the younger ones, *diguettes* might be visible signs that the village adheres to development. By adhering to this type of discourse, the villagers show their willingness to work on the donors' terms. As noted elsewhere, it is not uncommon for rural inhabitants in their interaction with development workers to confirm outsiders' preconceived

ideas, given the power relations in such interfaces (Leach & Mearns, 1996: 28) Along this line of thought it seems relevant to see the adoption of *diguettes* in connection with intra-village conflicts between older generations and the young, or between different clans fighting for power within the village.

Donors equally strive for development, but for very different reasons which are often rather vaguely enunciated and pursued in quite an ambiguous manner. For donors, development remains a very normative version of a special conflict-free modernity, which seems to be hard for the farmers to equate with the realities they are facing.

### Concluding remarks

It has not been the intention of this article to reject the relevance of soil- and water conservation in Burkina Faso, nor to refute the effectiveness of it. The aim of the article has been to question the positivist basis onto which the *diguettes* have been advocated, by moving the emphasis to an analysis stressing the complexity of donor/recipient relations of power. First of all this implies a constant and critical reconsideration of the normative notions on the basis of which development orthodoxies are built. In this light, the notion of self-reliance means being left marginalized, and sustainability means literally getting stones for bread. On the other hand, dependency becomes an opportunity which needs to be nurtured through careful lip-service to development projects, where knowledge of development discourse is an important element.

Secondly, when implementing and evaluating projects like the DANIDA-project in Seno, one probably has to be much more aware of not taking the statements of the respondents, farmers and aid workers at face value. Rather, one ought to adapt a *verstehende* approach, by which I mean that one should try to understand whether one would have done the same thing in his/her situation, in addition to analyzing what kind of interests are at stake. The interviewer is always a potential partner, able to help the farmer out of his/her very marginalized position.

This is, however, not what the DANIDA-project in Dori intends to do. In a recent evaluation (PNUD, 1996) the evaluation team admits that the overall ecological impact of the project is negligible. Their solution to this is, however, not to change course but to increase the construction of *diguettes* five- to tenfold (PNUD, 1996:2).

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